GNU Image Manipulation Program





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GIMP 3.0 User Manual, 03/28/2025

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1. GIMP User Manual Authors and Contributors

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Documentation

Alexandre Prokoudine, Aliya Rahmani, Alx Sa, Anders Jonsson, Andre Klapper, Andrew Pitonyak, Axel Wernicke, Calum Mackay, Daniel Egger, Daniel Hornung, Daniele Forsi, Daryl Lee, Dick Groskamp, Elad Shahar, Jacob Boerema (Wormnest), Jakub Friedl, Jan Smith, Jeff Jensen, Jehan, Jordi Mas, Julien Hardelin, lillolollo, Lloyd Konneker, luz.paz, Marco Ciampa, Mel Boyce (syngin), Michael Schumacher, Mick Curtis, nmat, Oliver Ellis (Red Haze), Piotr Drąg, Richard Poole, Róman Joost, Sally C. Barry, scootergrisen, SilverWoodchuck47, skierpage, Susanne Schmidt, Sven Claussner, Sven Neumann, Tc14, Tim Sabsch, Ulf-D. Ehlert, William Skaggs

Translations

Adolf Gerold (German), Alan Mortensen (Danish), Albin Bernharsson (Swedish), Aleksandr Melman (Russian), Alessandro Falappa (Italian), Alex Muñoz (Spanish), Alexander Shopov (Bulgarian), Alevtina Karashokova (Russian) , Alexander Weiher (German) , Alexandre Franke (French) , Alexandre Prokoudine (Russian) , Anders Jonsson (Swedish), Andi Chandler (British English), Andrea Zito (Italian), Angelo Córdoba Inunza (Spanish), Ask Hjorth Larsen (Danish), Axel Wernicke (German), Balázs Úr (Hungarian), Ben (German), Boyuan Yang (Simplified Chinese), Cai Qian (蔡芊) (Simplified Chinese), Cédric Gémy (French), Changwoo Ryu (Korean), Choi Ji-Hui(최지 희) (Korean) , Christian Kirbach (German) , Claude Paroz (French) , Danial Behzadi (Persian) , Daniel Francis (Spanish), Daniel Mustieles (Spanish), Daniel Nylander (Swedish), Daniel Serbănescu (Romanian), Daniel Winzen (German), Daniele Forsi (Italian), David 'Ilicz' Klementa (Czech), Delin Chang (Simplified Chinese), Dick Groskamp (Dutch) , Dimitris Spingos (Δημήτρης Σπίγγος) (Greek) , Djavan Fagundes (Brazilian Portuguese) , Domingo Stephan (German) , Emin Tufan Çetin (Turkish) , Enrico Nicoletto (Brazilian Portuguese) , Equip de Softcatalà (Catalan) , Eric Lamarque (Simplified Chinese), Erik Sköldås (Swedish), Felipe Ribeiro (Brazilian Portuguese), Florentina Musat (Romanian), Gerrit Jan Roelvink (Dutch), Grigory Bakunov (Russian), Guiu Rocafort (Spanish), Hannie Dumoleyn (Dutch), Hans De Jonge (Dutch), Hugo Carvalho (Portuguese), Ignacio Antl (Spanish), Isak Östlund (Swedish), Jakub Friedl (Czech) , Jiri Grönroos (Finnish) , Jiro Matsuzawa (Japanese) , Joe Hansen (Danish) , João S. O. Bueno (Brazilian Portuguese) , Jordi Mas (Catalan) , Julia Dronova (Russian) , Juliano de Souza Camargo (Brazilian Portuguese), Julien Hardelin (French), Karine Delvare (French), Kjartan Maraas (Norwegian Nynorsk), Kolbjørn Stuestøl (Norwegian Nynorsk), Luming Zh (Simplified Chinese), Maíra Canal (Brazilian Portuguese), Manuel Quiñones (Spanish), Marcia van den Hout (Dutch), Marco Ciampa (Italian), Marco Marega (Italian), María Majadas (Spanish), Markus Reinhardt (German), Martin Srebotnjak (Slovenian), Michael Hölzen (German), Mike Vargas (Italian), Milagros Infante Montero (Spanish), Milo Casagrande (Italian), Milo Ivir (Croatian), Mingye Wang (Simplified Chinese), Nickolay V. Shmyrev (Russian), Nathan Follens (Dutch), Niklas Mattison (Swedish), Oliver Heesakke (Dutch), Oleg Fritz (Russian), Patrycja Stawiarska (Polish), Pierre PERRIER (French), Piotr Drag (Polish), Rafael Ferreira (Brazilian Portuguese), Raymon Van Wanrooij (Dutch), Raymond Ostertag (French), Robert van Drunen (Dutch), Rodrigo Lledó (Spanish), Róman Joost (German), Roxana Chernogolova (Russian), Sabri Ünal (Turkish), Sebastian Rasmussen (Swedish), Sébastien Barre (French), Semka Kuloviæ-Debals (Croatian), Seong-ho Cho (Korean), SimaMoto,RyōTa (島本良太) (Japanese), Stas Solovey (Russian), Stéphane Poumaer (French), Susanne Schmidt (German), Sven Claussner (German), Sven Neumann (German), Thomas Güttler (German), Thomas S Lendo (German), Thomas Lotze (German), Tim Sabsch (German), Timo Jyrinki (Finnish), Ulf-D. Ehlert (German), Vitaly Lomov (Russian), Víttor Paulo Vieira da Costa (Brazilian Portuguese), Willer Gomes Junior (Brazilian Portuguese), Xceals (Simplified Chinese), Yang Hong (杨红) (Simplified Chinese), Yuri Chornoivan (Ukrainian), Yuri Myasoedov (Russian) , Zhong Yaotang (Simplified Chinese) , حجت الله مداحي (Persian)

Graphics, Stylesheets

Aryeom Han , Jakub Steiner , Øyvind Kolås , Róman Joost

Build System. Technical Contributions

Anne Schneider , Axel Wernicke , Chris Hübsch , Daniel Egger , Daniel Richard , Henrik Brix Andersen (brix) , Jacob Boerema (Wormnest) , Jehan , Jernej Simončič , Kenneth Nielsen , Michael Natterer (mitch) , Michael Schumacher ,

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Nickolay V. Shmyrev , Peter Volkov , Róman Joost , Sven Neumann , Thomas Schraitle , Ulf-D. Ehlert



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GNU Image Manipulation Program



Part I. Getting Started

Part I. Getting Started





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Part I. Getting Started



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1. Welcome to GIMP

GIMP is a multi-platform tool to create and edit images of all kinds. GIMP is an acronym for GNU Image Manipulation Program.

GIMP has many capabilities. It can be used as a simple paint program, an expert quality photo retouching program, a tool to create digital art, an online batch processing system, a mass production image renderer, an image format converter, etc.

GIMP is expandable and extensible. It is designed to be augmented with plug-ins and custom data to do just about anything. The advanced scripting interface allows everything from the simplest task to the most complex image manipulation procedures to be scripted.

GIMP is a Free Software application covered by the General Public License version 3 [GPL]. The GPL provides users with the freedom to access and alter the source code that makes up computer programs.

1.1. Known Platforms

One of GIMP's strengths is its free availability on a wide range of operating systems and architectures. Most GNU / Linux distributions include GIMP as a standard application. GIMP is also available for other operating systems such as Microsoft Windows™ or Apple's macOS™ (Darwin). The platforms on which GIMP has been known to work include:

GNU/Linux[™], Apple macOS[™], Microsoft Windows[™], OpenBSD[™], NetBSD[™], FreeBSD[™], Solaris[™], SunOS[™], AIX[™], HP-UX[™], Tru64[™], Digital UNIX[™], OSF/1[™], IRIX[™], GNU/Hurd[™], OS/2[™], BeOS[™], and its successor Haiku[™].

GIMP is easily ported to other operating systems because of its source code availability. For further information visit the GIMP developers homepage. [GIMP-DEV].

1.2. History of GIMP

The first version of GIMP was written by Peter Mattis and Spencer Kimball in 1995. Over the years <u>many other</u> <u>people</u> have contributed by helping with development, testing, providing support, translating and writing documentation. A short history of GIMP is available <u>online</u>.

1.3. GIMP's Help system

The GIMP Documentation Team provides the information that tries to help you understand how to use GIMP. The User Manual is an important part of this help. The latest version is always available on the website of the Documentation Team [GIMP-DOCS] in HTML format. When using GIMP, context sensitive help is available by

pressing the F1 key while the mouse is on top of a menu item or other part of GIMP's interface. Most dialogs will also show a help button that you can use to access the relevant part of the manual.

The manual in HTML format can also be installed locally on your computer. Installers are <u>available for Windows</u>, and on Linux your package manager may have a gimp-help package available. Though if your internet speed and bandwidth allow it, using the online manual is recommended since it is usually more up-to-date. When installing the local manual, you will have to adjust your <u>help preferences</u> to make use of the local copy.

1.4. Features and Capabilities

The following list is a short overview of some of the features and capabilities which GIMP offers you:

- A full suite of painting tools including brushes, a pencil, an airbrush, cloning, etc.
- Tile-based memory management, so image size is limited only by available disk space.
- Sub-pixel sampling for all paint tools for high-quality anti-aliasing.
- Full Alpha channel support for working with transparency.
- Layers and channels.
- A procedural database for calling internal GIMP functions from external programs, such as Script-Fu.
- Advanced scripting capabilities.
- Multiple undo/redo (limited only by disk space).
- Transformation tools including rotate, scale, shear and flip.
- Support for a wide range of file formats, including JPEG, PNG, GIF, PSD, DDS, XPM, TIFF, TGA, MPEG, PS, PDF, PCX, BMP and many others.
- Selection tools, including rectangle, ellipse, free, fuzzy, bezier and scissors.
- Plug-ins that allow for the easy addition of new file formats and new effect filters.







Part I. Getting Started



2. What's new in GIMP

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2. What's new in GIMP



Chapter 1. Introduction



2. What's new in GIMP

The best way to keep up-to-date with the latest changes in GIMP is to check the <u>news</u> on our website. We realize that it would be nice to have localized changes of the latest release that links to relevant pages in our documentation. However, our team just doesn't have enough volunteers to make that happen. We would welcome more people helping out with updating or translating our documentation, so don't hesitate to <u>contact us</u>.







Chapter 1. Introduction



Chapter 2. Starting GIMP

Chapter 2. Starting GIMP



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Chapter 2. Starting GIMP

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1. Running GIMP

Usually you start GIMP either by clicking GIMP's icon on your desktop (if available), selecting it from a menu, or by typing **gimp** on a command line. If you have multiple versions of GIMP installed, you may need to add the exact version number: **gimp-3.0**.

You can, if you want, provide a list of image file names on the command line after the program name so that GIMP automatically opens those files after it starts. It is also possible to open files from within GIMP once it is running using the Open Image Dialog.

Most operating systems support file associations, which associates a class of files (as determined by their filename extension, such as .jpg) with a corresponding application (such as GIMP). When image files are properly "associated" with GIMP, you can double click an image in your file browser to open it in GIMP.

If you installed the <u>Flatpak version of GIMP from flathub.org</u>, you start GIMP either by clicking an icon, or by typing **flatpak run org.gimp.GIMP//stable** on a command line.

1.1. Changing the Language

GIMP automatically detects and uses the system language. In the unlikely event that language detection fails, or if you want to use a different language, the easiest way is to change the language used in the Interface Preferences: Edit \rightarrow Preferences, then go to the Interface section; Language can be set at the top.

If you prefer to change language by setting environment variables, you can use:

Under Linux

In LINUX: in console mode, type LANGUAGE=en gimp or LANG=en gimp replacing en with fr, de, etc. according to the language you want. Background: Using LANGUAGE=en sets an environment variable for the executed program gimp.

Under Windows

Control Panel → System → Advanced → Environment button in "System Variables" area: Add button: Enter LANG for Name and fr, de, etc. for Value. Watch out! You have to click OK three successive times to validate your choice.

If you change languages often, you can create a batch file to change the language. Open NotePad. Type the following commands (for French for instance):

set lang=fr

start gimp-3.0.exe

Save this file as GIMP-FR.BAT (or another name, but always with a .BAT extension). Create a shortcut and drag it to your desktop.

Under Apple macOS

From System Settings, click General in the sidebar. Then select Language & Region. The desired language should be the first in the list.

Another GIMP Instance

You can use command line parameter -n to run multiple instances of GIMP. For example, gimp-3.0 starts GIMP in the default system language, and LANGUAGE=en gimp-3.0 -n starts another instance of GIMP in English. This

can be very useful for translators.

1.2. Command Line Arguments

Although command line arguments are not required when starting GIMP, they can be useful in certain situations. On a Unix system, you can use man gimp for a complete list.

These arguments must be added to the command line that you use to start GIMP as **gimp-3.0 [OPTION...] [FILE|URI...]**, where "OPTION..." can be one or more of the arguments listed below, followed by one or more file names.

-?, ,-h, --help

Display a list of all command line options.

--help-all

Show all help options.

--help-gegl

Show all GEGL options.

--help-gtk

Show GTK+ Options.

-v, --version

Print the GIMP version and exit.

--license

Show license information and exit.

--verbose

Show detailed start-up messages.

-n, --new-instance

Start a new GIMP instance.

-a, --as-new

Open images as new.

-i, --no-interface

Run without a user interface.

-d. --no-data

Do not load patterns, gradients, palettes, or brushes. Often useful in non-interactive situations where start-up time is to be minimized.

-f, --no-fonts

Do not load any fonts. This is useful to load GIMP faster for scripts that do not use fonts, or to find problems related to malformed fonts that hang GIMP.

-s, --no-splash

Do not show the splash screen while starting.

--no-shm

Do not use shared memory between GIMP and plug-ins.

--no-cpu-accel

Do not use special CPU acceleration functions. Useful for finding or disabling buggy accelerated hardware or functions.

--session=name

Use a different sessionrc file for this GIMP session. The given session name is appended to the default sessionrc filename.

-g, --gimprc=filename

Use an alternative gimprc file instead of the default one. The gimprc file contains a record of your preferences. Useful in cases where plug-in paths or machine specs may be different.

--system-gimprc=filename

Use an alternate system gimprc file.

-b, --batch=commands

Execute the set of commands non-interactively. The set of commands is typically in the form of a script that can be executed by one of the GIMP scripting interpreters. When the command is -, commands are read from standard input.

--batch-interpreter=*proc*

Specify the procedure to use to process batch commands. The default procedure is Script-Fu.

--quit

Quit immediately after performing requested actions

-c, --console-messages

Do not display dialog boxes on errors or warnings. Print the messages on the console instead.

--pdb-compat-mode=mode

PDB compatibility mode (off|on|warn).

--stack-trace-mode=mode

Debug in case of a crash (never|query|always).

--debug-handlers

Enable non-fatal debugging signal handlers. Useful for GIMP debugging.

--g-fatal-warnings

Make all warnings fatal. Useful for debugging.

--dump-gimprc

Output a gimprc file with default settings. Useful if you messed up the gimprc file.

--show-playground

Show a preferences page with experimental features.

--display=display

Use the designated X display (does not apply to all platforms).

1.3. Configuration Folder

When first run, GIMP creates a configuration folder. All of the configuration information is stored in this folder. If you remove or rename the folder, GIMP repeats the initial configuration process and creates a new configuration folder. The exact location of your configuration folder depends on your Operating System:

Under Linux:

\$XDG CONFIG HOME

Usually: \$HOME/.config/GIMP/3.0/

Under Microsoft Windows:

%APPDATA%

Usually: C:\Users\USERNAME\AppData\Roaming\GIMP\3.0\

Under Apple macOS:

NSApplicationSupportDirectory

Usually: ~/Library/Application Support/GIMP/3.0/

1.4. Tips and Tricks

Just a couple of suggestions before you start:

- GIMP can provide tips you can read at any time using the menu command Help → Tip of the Day. The tips provide information that is considered useful, but not easy to learn by experimenting; so they are worth reading. Please consider reading the tips when you have the time.
- If at some point you are trying to do something, and GIMP seems to have suddenly stopped functioning, the Getting Unstuck section may be able to help you out.
- Don't forget to check out the <u>Preferences Dialog</u>. GIMP is very customizable. There are a lot of settings that you can adjust to your personal preferences.







2. What's new in GIMP



Chapter 3. First Steps with GIMP

Chapter 3. First Steps with GIMP







Chapter 3. First Steps with GIMP

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1. Basic Concepts

Figure 3.1. Wilber, the GIMP mascot



The Wilber Construction Kit (<u>src/images/Wilber_Construction_Kit_original.xcf</u>) allows you to give GIMP's mascot named Wilber a different appearance. It is the work of Tuomas Kuosmanen (tigert).

This section provides a brief introduction to the basic concepts and terminology used in GIMP. The concepts presented here are explained in much greater depth elsewhere. With a few exceptions, we have avoided cluttering

this section with a lot of links and cross-references: everything mentioned here is so high-level that you can easily locate it in the index.

Images

Images are the basic entities used by GIMP. Roughly speaking, an "image" corresponds to a single file, such as a TIFF or JPEG file. You can also think of an image as corresponding to a single display window (although in truth it is possible to have multiple windows all displaying the same image). It is not possible to have a single window display more than one image, though, or for an image to have no window displaying it.

A GIMP image may be quite a complicated thing. Instead of thinking of it as a sheet of paper with a picture on it, think of it as more like a stack of sheets, called "layers". In addition to a stack of layers, a GIMP image may contain a selection mask, a set of channels, and a set of paths. In fact, GIMP provides a mechanism for attaching arbitrary pieces of data, called "parasites", to an image.

In GIMP, it is possible to have many images open at the same time. Although large images may use many megabytes of memory, GIMP uses a sophisticated tile-based memory management system that allows GIMP to handle very large images gracefully. There are limits, however, and having more memory available may improve system performance.

Layers

If a simple image can be compared to a single sheet of paper, an image with layers is likened to a sheaf of transparent papers stacked one on top of the other. You can draw on each paper, but still see the content of the other sheets through the transparent areas. You can also move one sheet in relation to the others. Sophisticated GIMP users often deal with images containing many layers, even dozens of them. Layers need not be opaque, and they need not cover the entire extent of an image, so when you look at an image's display, you may see more than just the top layer: you may see elements of many layers. For more info see Introduction to Layers.

Resolution

Digital images consist of a grid of square pixels. Each image has a size measured in two dimensions, such as 900 pixels wide by 600 pixels high. But pixels don't have a set size in physical space. To set up an image for printing, we use a value called resolution, defined as the ratio between an image's size in pixels and its physical size (usually in inches) when it is printed on paper. Most file formats (but not all) can save this value, which is expressed as ppi—pixels per inch.

When printing a file, the resolution determines the size the image will have on paper, and as a result, the physical size of the pixels. The same 900×600 pixel image may be printed as a small 3×2" card with barely noticeable pixels—or as a large poster with large, chunky pixels.

Images imported from cameras and mobile devices tend to have a resolution attached to the file. The resolution is usually 72 or 96 ppi. It is important to realize that this resolution is arbitrary and was chosen for historic reasons. You can always change the resolution with GIMP—this has no effect on the actual image pixels. Furthermore, for uses such as displaying images online, on mobile devices, television or video games—in short, any use that is not print—the resolution value is meaningless and is ignored. Instead, the image is usually displayed so that each image pixel conforms to one screen pixel.

Channels

A Channel is a single component of a pixel's color. For a colored pixel in GIMP, these components are usually Red, Green, Blue and sometimes transparency (Alpha). For a <u>Grayscale</u> image, they are Gray and Alpha and for an <u>Indexed</u> color image, they are Indexed and Alpha.

The entire rectangular array of any one of the color components for all of the pixels in an image is also referred to as a Channel. You can see these color channels with the Channels Dialog.

When the image is displayed, GIMP puts these components together to form the pixel colors for the screen, printer, or other output device. Some output devices may use different channels from Red, Green and Blue. If they do, GIMP's channels are converted into the appropriate ones for the device when the image is displayed. Channels can be useful when you are working on an image which needs adjustment in one particular color. For example, if you want to remove "red eye" from a photograph, you might work on the Red channel.

You can look at channels as masks which allow or restrict the output of the color that the channel represents. By using Filters on the channel information, you can create many varied and subtle effects on an image. A simple example of using a Filter on the color channels is the Channel Mixer filter.

In addition to these channels, GIMP also allows you to create other channels (or more correctly, Channel Masks), which are displayed in the lower part of the Channels dialog. You can create a New Channel or save a selection to a channel (mask). See the glossary entry on Masks for more information about Channel Masks.

Selections

Often when modifying an image, you only want a part of the image to be affected. The "selection" mechanism makes this possible. Each image has its own selection, which you normally see as a moving dashed line separating the selected parts from the unselected parts (the so-called "marching ants"). Actually this is a bit misleading: selection in GIMP is graded, not all-or-nothing, and really the selection is represented by a full-fledged grayscale channel. The dashed line that you normally see is simply a contour line at the 50%-selected level. At any time, though, you can visualize the selection channel in all its glorious detail by toggling the Quick Mask button.

A large component of learning how to use GIMP effectively is acquiring the art of making good selections—selections that contain exactly what you need and nothing more. Because selection-handling is so centrally important, GIMP provides many tools for doing it: an assortment of selection-making tools, a menu of selection operations, and the ability to switch to Quick Mask mode, in which you can treat the selection channel as though it were a color channel, thereby "painting the selection". For more information, see also The Selection.

Undoing

When you make mistakes, you can undo them. Nearly everything you can do to an image is undoable. In fact, you can usually undo a substantial number of the most recent things you did, if you decide that they were misguided. GIMP makes this possible by keeping a history of your actions. This history consumes memory, though, so undoability is not infinite. Some actions use very little undo memory, so that you can do dozens of them before the earliest ones are deleted from this history; other types of actions require massive amounts of undo memory.

You can configure the amount of memory GIMP allows for the undo history of each image, but in any situation, you should always be able to undo at least your 2-3 most recent actions. The most important action that is not undoable is closing an image. For this reason, GIMP asks you to confirm that you really want to close the image if you have made any changes to it. For more information, see also <u>Undoing</u>.

Plug-ins

A lot of the things that you do to an image in GIMP are done by GIMP itself. However, GIMP also makes extensive use of "plug-ins", which are external programs that interact very closely with GIMP, and are capable of manipulating images and other GIMP objects in very sophisticated ways. Many important plug-ins are bundled with GIMP, but there are also many available by other means. In fact, writing plug-ins (and scripts) is the easiest way for people not on the GIMP development team to add new capabilities to GIMP.

All of the commands in the Filters menu, and a substantial number of commands in other menus, are actually implemented as plug-ins.

Scripts

In addition to plug-ins, GIMP can also make use of scripts. Scripts are written in a language called Script-Fu, which is unique to GIMP (for those who care, it is a dialect of the Lisp-like language called Scheme). In the past there was a clear distinction between scripts and plug-ins, but that is disappearing. Depending on which Script-Fu interpreter you use, Scheme scripts can also be installed as plug-ins.







Chapter 2. Starting GIMP



Main Windows

2. Main Windows

Chapter 3. First Steps with GIMP





2. Main Windows

The GIMP user interface is available in two modes:

- multi-window mode,
- single window mode.

When you open GIMP for the first time, it opens in single-window mode by default. You can enable multi-window mode by unchecking the Windows \rightarrow Single-Window Mode option in the main menu. After quitting GIMP, GIMP will start in the mode you have selected next time.

Multi-Window Mode

Figure 3.2. A screenshot illustrating the multi-window mode.



The screenshot above shows the most basic multi-window arrangement for GIMP that can be used effectively. You will see two panels, left and right, and an image window in the middle. A second image is partially masked. The left panel contains the Toolbox as well as Tool Options, Device Status, Undo History and Images dialogs together. The right panel contains Brushes, Patterns, Fonts and Document History dialogs together in a multi-tab dock, and Layers, Channels and Paths dialogs together in another multi-tab dock.

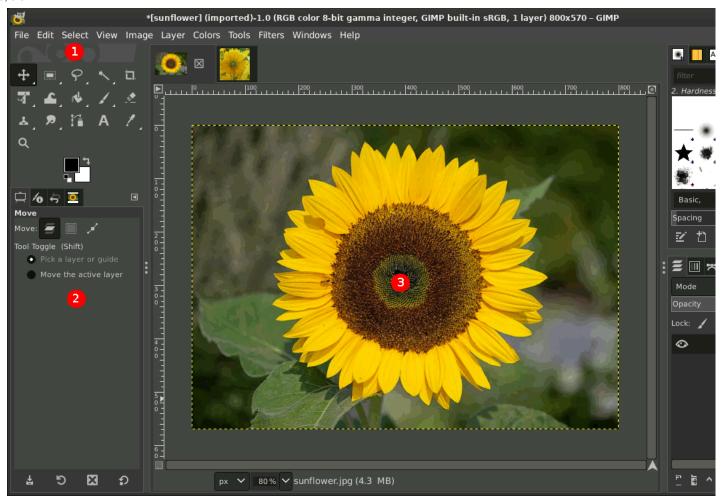
- 1. The Toolbox: Contains a set of icon buttons used to select tools. By default, it also contains the foreground and background colors. You can add brush, pattern, gradient and active image icons. Use Edit → Preferences → Toolbox to enable, or disable the extra items.
- 2. Tool options: Docked below the Toolbox is a Tool Options dialog, showing options for the currently selected tool (in this case, the Move tool).
- 3. Image windows: Each image open in GIMP is displayed in a separate window. Many images can be open at the same time, limited by only the system resources. Before you can do anything useful in GIMP, you need to have at least one image window open. The image window holds the Menu of the main commands of GIMP (File, Edit, Select, etc.), which you can also get by right-clicking on the window.
 - An image can be bigger than the image window. In that case, GIMP displays the image in a reduced zoom level which allows to see the full image in the image window. If you turn to the 100% zoom level, scroll bars appear, allowing you to pan across the image.
- 4. The Brushes, Patterns, Fonts, Document History dock note that the dialogs in the dock are tabs. The Brushes tab is open: it shows the type of brush used by paint tools.
- 5. Layers, Channels, Paths: The docked dialog below the brushes dialog shows the dialogs (tabs) for managing layers, channels and paths. The Layers tab is open: it shows the layer structure of the currently active image, and allows it to be manipulated in a variety of ways. It is possible to do a few very basic things without using the Layers dialog, but even moderately sophisticated GIMP users find it indispensable to have the Layers dialog available at all times.

Dialog and dock managing is described in <u>Section 2.3, "Dialogs and Docking"</u>

Single Window Mode

Figure 3.3. A screenshot illustrating the single-window mode.

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You find the same elements, with differences in their management:

• Left and right panels are fixed; you can't move them. But you can decrease or increase their width by dragging the moving pointer that appears when the mouse pointer overflies the right border of the left pane. If you want to keep the left pane narrow, please use the scroll bar at the bottom of the tool options to pan across the options display.

If you reduce the width of a multi-tab dock, there may be not enough room for all tabs; then arrow-heads 🔨 , 🕨 appear allowing you to scroll through tabs.



- As in multi-window mode, you can mask these panels using the Tab key.
- The image window occupies all space between both panels.

 When several images are open, a new bar appears above the image window, with a tab for every image. You can navigate between images by clicking on tabs or either using | Ctrl |+ | Page Up or Page Down | or | Alt |+ | Number |. "Number" is tab number; you must use the number keys of the upper line of your keyboard, not that of keypad (Alt-shift necessary for some national keyboards).

This is a minimal setup. There are over a dozen other types of dialogs used by GIMP for various purposes, but users typically open them when they need them and close them when they are done. Knowledgeable users generally keep the Toolbox (with Tool Options) and Layers dialog open at all times. The Toolbox is essential to many GIMP operations. The Tool Options section is actually a separate dialog, shown docked to the Main Toolbox in the screenshot. Knowledgeable users almost always have it set up this way: it is very difficult to use tools effectively without being able to see how their options are set. The Layers dialog comes into play when you work with an image with multiple layers: after you advance beyond the most basic stages of GIMP expertise, this means almost always. And of course it helps to display the images you're editing on the screen; if you close the image window before saving your work, GIMP will ask you whether you want to close the file.



Note

The following sections walk you through the components of each of the windows shown in the screenshot, explaining what they are and how they work. Once you have read them, plus the section describing the basic structure of GIMP images, you should have learned enough to use GIMP for a wide variety of basic image manipulations. You can then look through the rest of the manual at your leisure (or just experiment) to learn the almost limitless number of more subtle and specialized things that are possible. Have fun!

2.1. The Toolbox

Figure 3.4. Screenshot of the Toolbox

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The Toolbox is the heart of GIMP. Here is a quick tour of what you will find there.



Tip

In the Toolbox, as in most parts of GIMP, moving the mouse over something and letting it rest for a moment, usually displays a "tooltip" that describes the thing. Short cut keys are also frequently shown in the tooltip. In many cases, you can hover the mouse over an item and press the $\boxed{\textbf{F1}} \text{ key to get help about the thing that is underneath the mouse}.$

By default, only the Foreground/Background Colors area is visible. You can add the Brush/Pattern/Gradient area and Active Image area through Edit → Preferences → Toolbox: Tools configuration.

- 1. The GIMP logo: At the top of the toolbox, you can click-drag-and-drop images from a file browser into this area or into the tool icons to open the images. You can hide this logo by unchecking the Show GIMP logo option in the Toolbox Preferences.
- Tool icons: These icons are buttons which activate tools for a wide variety of purposes: selecting parts of images, painting an image, transforming an image, etc. <u>Section 1</u>, <u>"The Toolbox"</u> gives an overview of how to work with tools, and each tool is described systematically in the <u>Tools</u> chapter.
- 3. Foreground/Background colors:
 - The color area shows GIMP's current foreground and background colors, which are used for painting, filling, and many other operations. Clicking on either one of them brings up a color selector dialog that allows you to change to a different color.

 Clicking on the small symbol in the lower left corner resets the foreground and background colors to black and white. Pressing the D key has the same effect.
 - Clicking on the small symbol in the lower left corner resets the foreground and background colors to black and white. Pressing the D key has the same effect Clicking on the double-headed arrow symbol swaps the foreground and background colors. Pressing the X key has the same effect.
- 4. Brush/Pattern/Gradient: The symbols here show you GIMP's current selections for: the Paintbrush, used by all tools that allow you to paint on the image ("painting" includes operations like erasing and smudging, by the way); for the Pattern, which is used in filling selected areas of an image; and for the Gradient, which comes into play whenever an operation requires a smoothly varying range of colors. Clicking on any of these symbols brings up a dialog window that allows you to change it.

 Active Image: In GIMP, you can work with many images at once, but at any given moment, only one image is the "active image". Here you find a small iconic representation
- 5. Active Image: In GIMP, you can work with many images at once, but at any given moment, only one image is the "active image". Here you find a small iconic representation of the active image. Click the icon to display a dialog with a list of the currently open images, click an image in the dialog to make it active. Usually, you click an image window in multi-window mode, or an image tab in single-window mode, to make it the active image.
 If you use GIMP on a Unix-like operating system with the X Window System, you can also drag and drop the thumbnail to an enabled XDS file manager to directly save the corresponding image.



Note

At every start, GIMP selects the brush, color, pattern vou used when quitting your previous session because the Save input device settings on exit in Perferences/Input Devices, is checked by default. If you uncheck it, GIMP will use a color, a brush and a pattern by default, always the same



Chapter 3. First Steps with GIMP

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2.2. Image Window

2.2. Image Window

2. Main Windows



2.2. Image Window

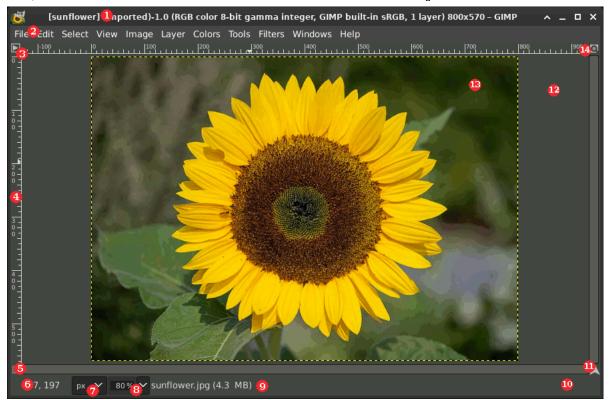
GIMP user interface is available in two modes: single-window mode (default), and multi-windows mode that you can get unchecking the Windows → Single-Window Mode option. When you start GIMP without any image open, the image window seems to be absent in single-window mode, while, in multi-window mode, an image window exists, even if no image is open.

We will begin with a brief description of the components that are present by default in an ordinary image window. Some of the components can be removed by using commands in the View menu.

Figure 3.5. The Image Area in Single-Window Mode



Figure 3.6. The Image Window in Multi-Window Mode





Note

Despite Single-window Mode, we will use "image window" for "image area".

- 1. *Title Bar:* The Title Bar in an image window without an image displays "GNU Image Manipulating Program". An image window with an image displays the image name and its specifications in the title bar according to the settings in Preferences Dialog. The Title Bar is provided by the operating system, not by GIMP, so its appearance is likely to vary with the operating system, window manager, and/or theme.
 - If you have opened a non-xcf image, it is "(imported)" as a .xcf file and its original name appears in the status bar at the bottom of the image window. When an image is modified, an asterisk appears in front of its title.
- 2. Main Menu: Directly below the Title Bar appears the Menu bar (unless it has been suppressed). The Main Menu provides access to nearly every operation you can perform on an image. You can also right-click on an image to display a pop-up menu, [1], or by left-clicking on the little "arrow-head" symbol in the upper left corner, called Menu Button, described just below. Many menu commands are also associated with keyboard shortcuts as shown in the menu. You can define your own custom shortcuts for menu actions in the Keyboard Shortcuts Dialog.
- 3. Menu Button: Click the Menu Button to display the Main Menu in a column, (essential in full screen mode). If you like to use keyboard shortcuts, use Shift + F10 to open the menu.
- 4. Ruler: In the default layout, rulers are shown above and to the left of the image. Use the rulers to determine coordinates within the image. The default unit for rulers is pixels; use the settings described below to use a unit other than pixels.
 - One of the most important uses of rulers is to create *guides*. Click and drag a ruler into the image to create a guide. A guide is a line that helps you accurately position things—or verify that another line is truly horizontal or vertical. Using the Move tool, you can click and drag a guide. Drag a guide out of the image to delete it; you can always drag another guide into the image. You can even use multiple guides at the same time.

 In ruler area, the mouse pointer position is marked with two small arrow-heads pointing vertically and horizontally.
- 5. Quick Mask Toggle: The small button in the lower left corner of the image toggles the Quick Mask on and off. When the Quick Mask is on, the button is outlined in red. See Quick Mask for more details on this highly useful tool.
- 6. Pointer Coordinates: When the pointer (mouse cursor, if you are using a mouse) is within the image boundaries, the rectangular area in the lower left corner of the window displays the current pointer coordinates. The units are the same as for the rulers.
- 7. Units Menu: Use the Units Menu to change the units used for rulers and several other purposes. The default unit is pixels, but you can quickly change to inches, cm, or several other possibilities using this menu. Note that the setting of "Dot for dot" in the View menu affects how the display is scaled: see <u>Dot for Dot</u> for more information.
- 8. Zoom Button: There are a number of ways to zoom the image in or out, but the Zoom Button is perhaps the simplest. You can directly enter a zoom level in the text box for precise control.
- 9. Status Area: The Status Area is at the bottom of the image window. By default, the Status Area displays the original name of the image.xcf file, and the amount of system memory used by the image. Please use Edit

 Preferences

 Image Windows

 Title

 Status to customize the information displayed in the Status Area. During time-consuming operations, the status area temporarily shows the running operation and how complete the operation is.



Note

Note that the memory used by the image is very different from the image file size. For instance, a 70 kB .PNG image may occupy 246 kB in RAM when displayed. There are two primary reasons the difference in memory usage. First, a .PNG file is compressed format, and the image is reconstituted in RAM in uncompressed form. Second, GIMP uses extra memory, and copies of the image, for use by the Undo command.

10. Cancel Button: During complex time-consuming operations, usually a plug-in, a Cancel button temporarily appears in the lower right corner of the window. Use the Cancel button to stop the operation.



Note

A few plug-ins respond badly to being canceled, sometimes leaving corrupted pieces of images behind.

- 11. Navigation Control: This is the button at the lower right corner of the image window. Click and hold (do not release the mouse button) on the navigation control to display the Navigation Preview. The Navigation Preview has a miniature view of the image with the displayed area outlined. Use the Navigation Preview to quickly pan to a different part of the image—move the mouse while keeping the button pressed. The Navigation Window is often the most convenient way to quickly navigate around a large image with only a small portion displayed. See Navigation Dialog for other ways to access the Navigation Window.
- 12. Inactive Padding Area: When the image dimensions are smaller than the image window, this padding area separates the active image display from the rest of the user interface, so you're able to distinguish between them. You cannot apply any Filters or Operations in general to the inactive area.
- 13. Image Display: The most important part of the image window is, of course, the image display or canvas. It occupies the central area of the window, surrounded by a yellow dotted line showing the image boundary, against a neutral gray background.

 Besides the Navigation Control mentioned above, you can move the image with the mouse or keyboard. The keyboard arrow keys allow you to move the image one pixel at a time. Holding the | Shift | key while using the arrow keys moves the image a larger distance. The mouse scroll wheel moves the image up or down; when holding the | Shift | key

the scroll wheel moves the image left or right. If your mouse has a middle-button, click-drag with it to pan across the image. Alternatively, you can press the | Spacebar | in combination with moving the mouse.

You can change the zoom level of the image display in a variety of ways, including using the Zoom Button mentioned above, and the Zoom setting described below. Other ways of adjusting the zoom are using Ctrl mousewheel, using the Zoom commands in the View menu, and using the Zoom Tool.

Image Window Resize Toggle: Without enabling this feature, if you change the size of the image window by click-and-dragging border limits, the image size and zoom does not change. If you make the window larger, for example, then you will see more of the image. If this button is pressed, however, the image resizes when the window resizes so that (mostly) the same portion of the image is displayed before and after the window is resized.



Drag and drop an image into the Toolbox window from a file browser to open the image in its own Image window or tab.

Dragging an image file into the Layers dialog adds it to the image as a new layer.

Image size and image window size can be different. You can make image fit window, and vice versa, using two keyboard shortcuts:

- Ctrl + J: this command keeps the zoom level; it adapts window size to image size. The Shrink Wrap command does the same.
- Ctrl + Shift + J : this command modifies the zoom level to adapt the image display to the window.

Users with an Apple Macintosh and a one button mouse can use Ctrl +Mouse Button instead.

2. Main Windows



2.3. Dialogs and Docking

2.3. Dialogs and Docking





2.3. Dialogs and Docking

2.3.1. Organizing Dialogs

GIMP has great flexibility for arranging dialogs on your screen. A "dialog" is a moving window which contains options for a tool or is dedicated to a special task. A "dock" is a container which can hold a collection of persistent dialogs, such as the Tool Options dialog, Brushes dialog, Palette dialog, etc. Docks cannot, however, hold non-persistent dialogs such as the Preferences dialog or the image window.

GIMP has three default docks:

- the Tool Options, Device Status, Undo History and Images dock under the Toolbox in the left panel,
- the Brushes, Patterns, Fonts and Document History dock in the upper part of the right panel,
- the Layers, Channels and Paths dock in the lower part of the right panel.

In these docks, each dialog is in its own tab.

In multi-window mode, the Toolbox is a *utility window* and not a dock. In single-window mode, it belongs to the single window. Use Windows \rightarrow Dockable Dialogs to view a list of dockable dialogs. Select a dockable dialog from the list to view the dialog. If the dialog is available in a dock, then it is made visible. If the dialog is not in a dock, the behavior is different in multi and single window modes:

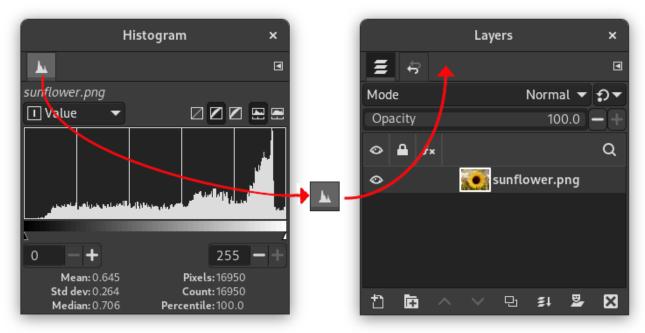
- In multi-window mode, a new window, containing the dialog, appears on the screen.
- In single-window mode, the dialog is automatically docked to the Brushes-Document History dock as a tab.

You can click-and-drag a tab and drop it in the wanted place:

- either in the tab bar of a dock, to integrate it in the dialog group,
- or on a docking bar that appears as a blue line when the mouse pointer goes over a dock border, to anchor the dialog to the dock.

In multi-window mode, you can also click on the dialog title and drag it to the wanted place.

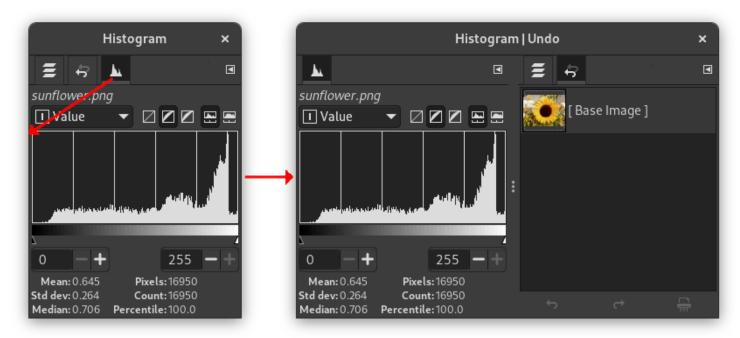
Figure 3.7. Integrating a new dialog in a dialog group



Here, in multi-window mode, the Histogram dialog was dragged to the tab bar of the Layers-Undo dock.

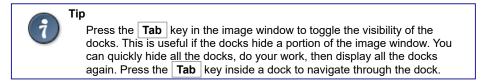
More simple: the Add tab command in the Tab menu Section 2.3.2, "Tab Menu".

Figure 3.8. Anchoring a dialog to a dock border



The Histogram dialog dragged to the left vertical docking bar of the right panel and the result: the dialog anchored to the left border of the right panel. This dialog now belongs to the right panel.

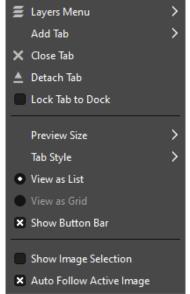
So, you can arrange dialogs in a multi-column display, interesting if you work with two screens, one for dialogs, the other for images.



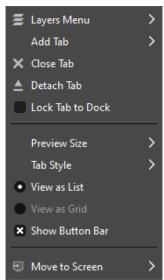
2.3.2. Tab Menu

In each dialog, you can access a special menu of tab-related operations by pressing the Tab Menu button <a>Image: Tab Menu button . The exact commands shown in the menu depend on the active dialog, but they always include operations for creating new tabs, closing or detaching tabs.

Figure 3.9. The Tab menu of the Layers dialog.



Multi-window mode



Single-window mode

The Tab menu gives you access to the following commands:

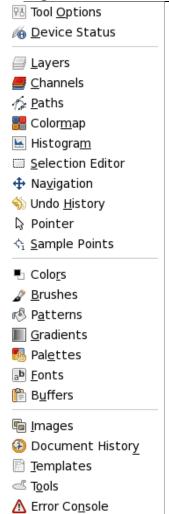
Context Menu

At the top of each Tab menu, an entry opens the dialog's context menu, which contains operations specific to that particular type of dialog. For example, the context menu for the Layers tab is Layers Menu, which contains a set of operations for manipulating layers.

Add Tab

Add Tab opens into a submenu allowing you to add a large variety of dockable dialogs as new tabs.

Figure 3.10. "Add tab" submenu



Close Tab

Close the dockable dialog. Closing the last dialog in a dock causes the dock itself to close.

Detach Tab

Detach the dialog from the dock, creating a new dock with the detached dialog as its only member. It has the same effect as dragging the tab out of the dock and releasing it at a location where it cannot be docked.

It's a way to create a paradoxical new window in single-window mode!

If the tab is locked, this menu item is disabled.

Lock Tab to Dock

Prevent the dialog from being moved or detached. When activated, Detach Tab is disabled.

Preview Size

Many, but not all, dialogs have Tab menus containing a Preview Size option, which opens a submenu giving a list of sizes for the items in the dialog, from small to large. For example, the Brushes dialog shows pictures of all available brushes: the Preview Size determines how large the pictures are. The default is Medium size.

Tab Style

Tab Style opens a submenu allowing you to choose the appearance of the tabs at the top. There are five choices, but not all are enabled for every dialog:

Icon

Use an icon to represent the dialog type.

Current Status

Is only available for dialogs that allows you to select something, such as a brush, pattern, gradient, etc. Current Status shows a representation of the currently selected item in the tab top.

Text

Use text to display the dialog type.

Icon and Text

Using both an icon and text results in wider tabs.

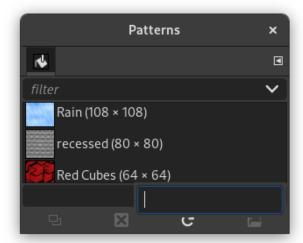
Status and Text

Show the currently selected item and text with the dialog type.

View as List, View as Grid

These entries are shown in dialogs that allow you to select an item from a set: brushes, patterns, fonts, etc. You can choose to view the items as a vertical list, with the name of each beside it, or as a grid, with representations of the items but no names. Each has its advantages: viewing as a list gives you more information, but viewing as a grid allows you to see more possibilities at once. The default for this varies across dialogs: for brushes and patterns, the default is a grid; for most other things, the default is a list. When the tree-view is View as List, you can use tags. Please see Section 3.7, "Tagging".
You can also use a list search field:

Figure 3.11. The list search field.



Press Ctrl + F to open the list search field, displayed at the bottom. An item must be selected for this command to be effective.

The list search field automatically closes after five seconds if you do nothing.



Note

The search field shortcut is also available for the tree-view you get in the "Brush", "Font" or "Pattern" option of several tools.

Show Button Bar

Some dialogs display a button bar on the bottom of the dialog; for example, the Patterns, Brushes, Gradients, and Images dialogs. This is a toggle. If it is checked, then the Button Bar is displayed.

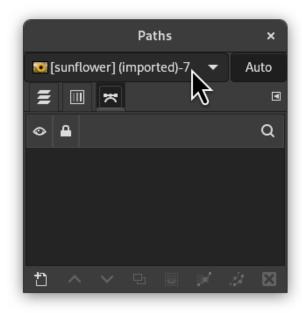
Figure 3.12. Button Bar on the Brushes dialog.



Show Image Selection

This option is available in multi-window mode only. This is a toggle. If it is checked, then the active image is shown at the top of the dock:

Figure 3.13. A dock with the Image Menu highlighted.



It is not available for dialogs docked below the Toolbox. This option is interesting only if you have several open images on your screen.

Auto Follow Active Image

This option is available in multi-window mode only. This option is also interesting only if you have several images open on your screen. Then, the information displayed in a dock is always that of the selected image in the Image Selection drop-down list. If the Auto Follow Active Image is disabled, the image can be selected only in the Image Selection. If enabled, you can also select it by activating the image directly (clicking on its title bar).

Move to Screen

The option Open Display... is an experimental functionality to choose a different display.



3/28/25, 8:52 AM 3. Undoing

3. Undoing



Chapter 3. First Steps with GIMP



3. Undoing

Almost anything you do to an image in GIMP can be undone. You can undo the most recent action by choosing Edit \rightarrow Undo from the main menu, but this is done so frequently that you really should memorize the keyboard shortcut, $\begin{bmatrix} \mathbf{Ctrl} & + \mathbf{Z} \end{bmatrix}$.

Undoing can itself be undone. After having undone an action, you can redo it by choosing $Edit \rightarrow Redo$ from the main menu, or use the keyboard shortcut, Ctrl + Y. It is often helpful to judge the effect of an action by repeatedly undoing and redoing it. This is usually very quick, and does not consume any extra resources or alter the undo history, so there is never any harm in it.



Caution

If you undo one or more actions and then operate on the image in any way except by using Undo or Redo, it will no longer be possible to redo those actions: they are lost forever. The solution to this, if it creates a problem for you, is to duplicate the image and then test on the copy. (Do *Not* test the original, because the undo/redo history is not copied when you duplicate an image.)

If you often find yourself undoing and redoing many steps at a time, it may be more convenient to work with the <u>Undo History dialog</u>, a dockable dialog that shows you a small sketch of each point in the Undo History, allowing you to go back or forward to that point by clicking.

Undo is performed on an image-specific basis: the "Undo History" is one of the components of an image. GIMP allocates a certain amount of memory to each image for this purpose. You can customize your Preferences to increase or decrease the amount, using the <u>System Resources</u> page of the Preferences dialog. There are two important variables: the *minimal number of undo levels*, which GIMP will maintain regardless of how much memory they consume, and the *maximum undo memory*, beyond which GIMP will begin to delete the oldest items from the Undo History.



Note

Even though the Undo History is a component of an image, it is not saved when you save the image using GIMP's native XCF format, which preserves every other image property. When the image is reopened, it will have an empty Undo History.

GIMP's implementation of Undo is rather sophisticated. Many operations require very little Undo memory (e.g., changing visibility of a layer), so you can perform long sequences of them before they drop out of the Undo History. Some operations, such as changing layer visibility, are *compressed*, so that doing them several times in a row produces only a single point in the Undo History. However, there are other operations that may consume a lot of undo memory. Most filters are implemented by plug-ins, so the GIMP core has no efficient way of knowing what changed. As such, there is no way to implement Undo except by memorizing the entire contents of the affected layer before and after the operation. You might only be able to perform a few such operations before they drop out of the Undo History.

3.1. Things That Cannot be Undone

Most actions that alter an image can be undone. Actions that do not alter the image generally cannot be undone. Examples include saving the image to a file, duplicating the image, copying part of the image to the clipboard, etc. It also includes most actions that affect the image display without altering the underlying image data. The most important example is zooming. There are, however, exceptions: toggling Quick Mask on or off can be undone, even though it does not alter the image data.

There are a few important actions that do alter an image but cannot be undone:

Closing the image

The Undo History is a component of the image, so when the image is closed and all of its resources are freed, the Undo History is gone. Because of this, unless the image has not been modified since the last time it was saved, GIMP always asks you to confirm that you really want to close the image.

Reverting the image

3/28/25, 8:52 AM 3. Undoing

"Reverting" means reloading the image from the file. GIMP actually implements this by closing the image and creating a new image, so the Undo History is lost as a consequence. Because of this, if the image is unclean, GIMP asks you to confirm that you really want to revert the image.

"Pieces" of actions

Some tools require you to perform a complex series of manipulations before they take effect, but only allow you to undo the whole thing rather than the individual elements. For example, the Scissors Select tool requires you to create a closed path by clicking at multiple points in the image, and then clicking inside the path to create a selection. You cannot undo the individual clicks: undoing after you are finished takes you all the way back to the starting point. For another example, when you are working with the Text tool, you cannot undo individual letters, font changes, etc.: undoing after you are finished removes the newly created text layer.

Filters, and other actions performed by plug-ins or scripts, can be undone just like actions implemented by the GIMP core, but this requires them to make correct use of GIMP's Undo functions. If the code is not correct, a plug-in can potentially corrupt the Undo History, so that not only the plug-in but also previous actions can no longer properly be undone. The plug-ins and scripts distributed with GIMP are all believed to be set up correctly, but obviously no guarantees can be given for plug-ins you obtain from other sources. Also, even if the code is correct, canceling a plug-in while it is running may corrupt the Undo History, so it is best to avoid this unless you have accidentally done something whose consequences are going to be very harmful.



2.3. Dialogs and Docking





4. Common Tasks

3/28/25, 8:53 AM 4. Common Tasks

4. Common Tasks



Chapter 3. First Steps with GIMP



4. Common Tasks

This tutorial is based on text Copyright © 2004 Carol Spears. The original tutorial can be found online: [TUT02].

4.1. Intention

GIMP is a powerful image editing program with many options and tools. However, it is also well suited for smaller tasks. The following tutorials are meant for those who want to achieve these common tasks without having to learn all the intricacies of GIMP and computer graphics in general.

Hopefully, these tutorials will not only help you with your current task, but also get you ready to learn more complex tools and methods later, when you have the time and inspiration.

Open an image via File → Open... from the image window.







3. Undoing



4.2. Change the Size of an Image for the screen

4.2. Change the Size of an Image for the screen



4. Common Tasks



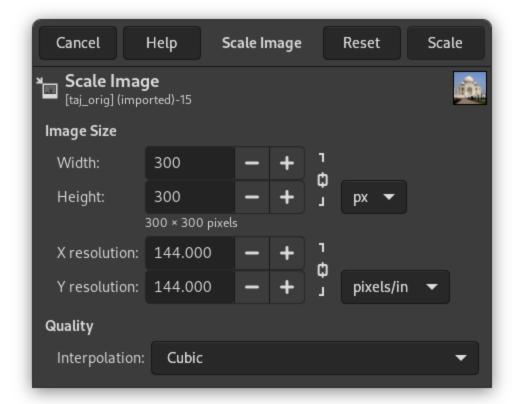
4.2. Change the Size of an Image for the screen

You have a huge image, possibly from a digital camera, and you want to resize it so that it displays nicely on a web page, online board or email message.

The first thing that you might notice after opening the image, is that GIMP opens the image at a logical size for viewing. If your image is very large, like the sample image, GIMP sets the zoom so that it displays nicely on the screen. The zoom level is shown in the <u>status bar</u> at the bottom of the image window. This does not change the actual image. The other thing to look at in the title bar is the mode. If the mode shows as RGB in the title bar, you are fine. If the mode says Indexed or Grayscale, read the <u>Section 4.7, "Change the Mode"</u>.

Select Image \rightarrow Scale Image.... You can right click on the image to open the menu, or use the menu along the top of the Image window.

Figure 3.14. Dialog for Image Scaling in Pixels



The unit of size for the purpose of displaying an image on a screen is the pixel. You can see the dialog has two sections: one for width and height and another for resolution. Resolution applies to printing only and has no effect on the image's size when it is displayed on a monitor or a mobile device. The reason is that different devices have different pixels sizes and so, an image that displays on one device (such as a smartphone) with a certain physical size, might display on other devices (such as an LCD projector) in another size altogether. For the purpose of displaying an image on a screen, you can ignore the resolution parameter. For the same reason, do not use any size unit other than the pixel in the height / width fields.

If you know the desired width, enter it in the dialog at the top where it says Width. This is shown in the figure above. If you don't have such a number in mind, choose an appropriate width for the desired use. Common screen sizes range between 600 pixels for simpler phones and 1920 pixels for an HD screen.

When you change one of the image's dimensions, GIMP changes the other dimension proportionally. To change the other dimension, see <u>Section 4.5, "Crop An Image"</u>. Bear in mind that when you change the two dimensions arbitrarily, the image might become stretched or squashed.



4. Common Tasks





4.3. Change the Size of an Image for print

4.3. Change the Size of an Image for print



4. Common Tasks



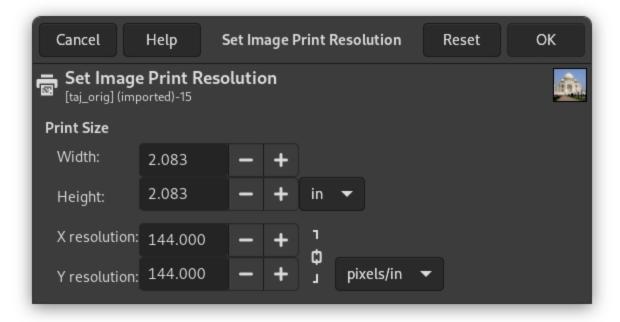
4.3. Change the Size of an Image for print

As discussed before, pixels don't have a set size in the real world. When you set out to print an image on paper, GIMP needs to know how big each pixel is. We use a parameter called resolution to set the ratio between pixels and real-world units such as inches.

By default, most images open with the resolution set to 72. This number was chosen for historical reasons as it was the resolution of screens in the past, and means that when printed, every pixel is 1/72 of an inch wide. When printing images that are taken with modern digital cameras, this produces very large but chunky images with visible pixels. What we want to do is tell GIMP to print it with the size we have in mind, but not alter the pixel data so as not to lose quality.

To change the print size, select Image → Print Size.... Select a size unit you are comfortable with, such as "inches". Set one dimension, and let GIMP change the other one proportionally. Now examine the change in resolution. If the resolution is 300 pixels per Inch or more, the printed image's quality will be very high and pixels will not be noticeable. With a resolution of between 200 and 150 ppi, pixels will be somewhat noticeable, but the image will be fine as long as its not inspected too closely. Values lower than 100 are visibly coarse and should only be used for material that is seen from a distance, such as signs or large posters.

Figure 3.15. Dialog for Setting Print Size









4.2. Change the Size of an Image for the screen



4.4. Compressing Images

4.4. Compressing Images



4. Common Tasks



4.4. Compressing Images

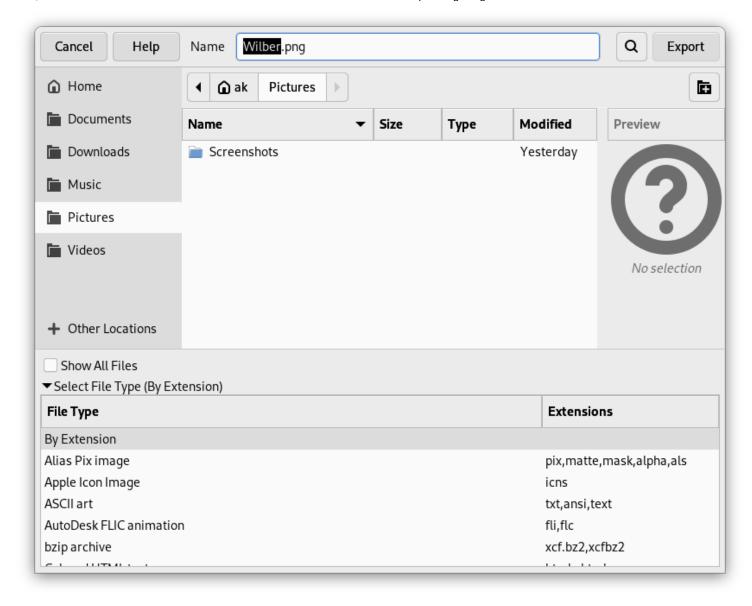
Figure 3.16. Example Image for JPEG Saving



If you have images that take up a large space on disk, you can reduce that space even without changing the image dimensions. One of the best image compressions is achieved by using the JPG format, but even if the image is already in this format, you can usually still make it take up less space, as the JPG format has an adaptive compression scheme that allows saving in varying levels of compression. The trade-off is that the less space an image takes, the more detail from the original image you lose. You should also be aware that repeated saving in the JPG format causes more and more image degradation.

Images are loaded and saved as .XCF files. Your JPG image has been loaded as XCF. GIMP offers you to File \rightarrow Overwrite imagename.jpg or File \rightarrow Export As to open the "Export Image" dialog.

Figure 3.17. "Export Image" Dialog



The dialog opens with the file name already selected in the Name field, with the default extension. Delete the existing extension and type ".jpg" instead. GIMP will determine the file type from the extension. Click Export. This opens the Export Image as JPEG dialog that contains the Quality control.

The Export Image as JPEG dialog uses default values that reduce size in memory while retaining good visual quality; this is the safest and quickest thing to do.

Figure 3.18. Example for Moderate JPEG Compression



Quality: 90 (default); Size: 33.7 KiloBytes



Quality: 75; Size: 20.1 KiloBytes

Reduce the image Quality to make the image even smaller. Reduced quality degrades the image, so be certain to check "Show preview in image window" to visually gauge the degradation. A Quality setting of 10 produces a very poor quality image that uses very little disk space. A quality of 75 produces a reasonable image using much less disk space, which will, in turn, load much faster on a web page. Although the image is somewhat degraded, it is acceptable for the intended purpose.

Finally, here is a comparison of the same picture with varying degrees of compression:

Figure 3.19. Example for High JPEG Compression



Quality: 10; Size: 3.4 KiloBytes



Quality: 40; Size: 9.3 KiloBytes

Figure 3.20. Example for Moderate JPEG Compression



Quality: 70; Size: 15.2 KiloBytes



Quality: 100; Size: 72.6 KiloBytes

+

4.3. Change the Size of an Image for print

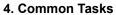
Report a bug in GIMP Report a documentation error





4.5. Crop An Image

4.5. Crop An Image





4.5. Crop An Image

Figure 3.21. Example Image for Cropping



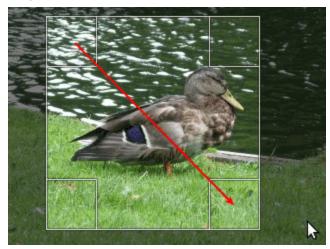
Source image



Image after cropping

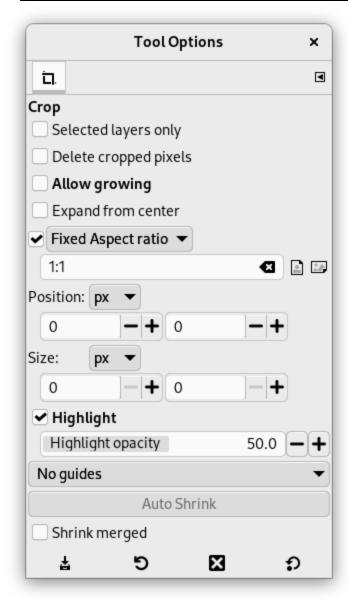
There are many reasons to crop an image; for example, fitting an image to fill a frame, removing a portion of the background to emphasize the subject, etc. There are two methods to activate the crop tool. Click the \Box button in the Toolbox, or use Tools \rightarrow Transform Tools \rightarrow Crop in the image window. This changes the cursor and allow you to click and drag a rectangular shape. The button in the toolbox is the easiest way to get to any of the tools.

Figure 3.22. Select a Region to Crop



Click on one corner of the desired crop area and drag your mouse to create the crop rectangle. You don't have to be accurate as you can change the exact shape of the rectangle later.

Figure 3.23. Dialog for Cropping



Crop tool options with the Fixed Aspect ratio option

4.5. Crop An Image



Crop rectangle with a fixed aspect ratio

After completing the click and drag motion, a rectangle with special regions is shown on the canvas. As the cursor is moved over the different areas of the selected crop area, the cursor changes. You can then drag the rectangle's corners or edges to change the dimensions of the selected area. As shown in the figure above, as the crop area is resized, the dimensions and ratio are shown in the status bar. Double-click inside the rectangle or press **Enter** to complete cropping. See <u>Section 4.4, "Crop"</u> for more information on cropping in GIMP.

If you would like to crop the image in a specific aspect ratio, such as a square, make sure the tool options are visible (Windows \rightarrow Dockable Dialogs \rightarrow Tool Options). In the <u>Tool Options</u> dockable, check the mark next to Fixed Aspect Ratio . Type the desired aspect ratio in the text field below, such as "1:1".

You also have buttons to change the aspect from landscape to portrait. After you set the aspect ratio, drag one of the corners of the crop rectangle to update it. The rectangle changes to the chosen ratio, and when you drag it should maintain that ratio.











4.6. Find Info About Your Image

4.6. Find Info About Your Image



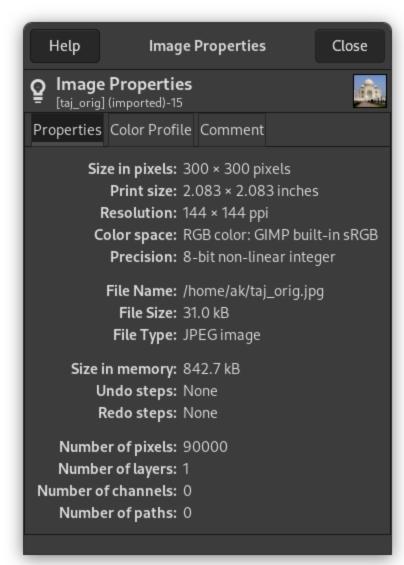
4. Common Tasks



4.6. Find Info About Your Image

When you need to find out information about your image, select Image → Image Properties from the main menu. The "Image Properties" dialog contains information about the image size, resolution, mode and much more. See also <u>Section 6.37, "Image Properties"</u>.

Figure 3.24. "Image Properties" Dialog













4.7. Change the Mode

4.7. Change the Mode



4. Common Tasks



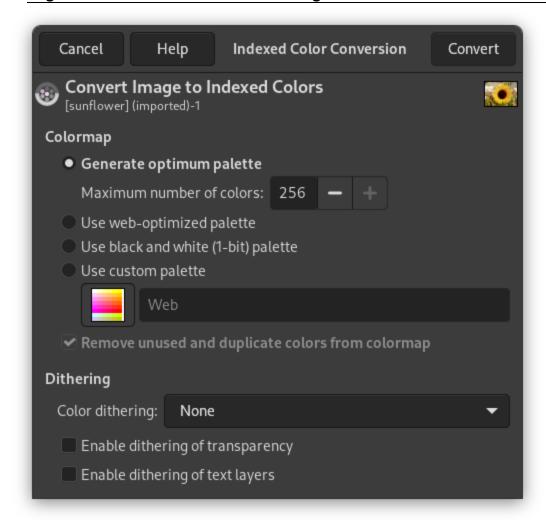
4.7. Change the Mode

As with anything else, images come in different kinds and serve different purposes. Sometimes, a small size is important (for web sites) and at other times, retaining a high color depth (e.g., a family portrait) is what you want. GIMP can handle all of this, primarily by converting between three fundamental image modes, via Image \rightarrow Mode in the main menu. These three available modes are:

RGB: This is the default mode, used for high-quality images, and able to display millions of colors. This is also the mode for most of your image work including scaling, cropping, and even flipping. In RGB mode, each pixel consists of three different components: R->Red, G->Green, B->Blue. Each of these in turn can have an intensity value of 0-255. What you see at every pixel is an additive combination of these three components.

Indexed: This is the mode usually used when file size is of concern, or when you are working with images with few colors. It involves using a fixed number of colors (256 or less) for the entire image to represent colors. By default, when you change an image to a paletted image, GIMP generates an "optimum palette" to best represent your image.

Figure 3.25. The "Convert Image to Indexed Colors" dialog



As you might expect, since the information needed to represent the color at each pixel is less, the file size is smaller. However, sometimes, there are options in the various menus that are disabled for no apparent reason. This usually means that the filter or option cannot be applied when your image is in its current mode. Changing the mode to RGB, as outlined above, should solve this issue. If RGB mode doesn't work either, perhaps the option you're trying requires

your layer to have the ability to be transparent. This can be done just as easily via Layer \rightarrow Transparency \rightarrow Add Alpha Channel.

Grayscale: Grayscale images have only shades of gray. This mode has some specific uses and takes less space on the hard drive in some formats, but is not recommended for general use as reading it is not supported by many applications.

There is no need to convert an image to a specific mode before saving it in your favorite format, as GIMP is smart enough to properly export the image.







4.6. Find Info About Your Image



4.8. Flip An Image

4.8. Flip An Image



4. Common Tasks



4.8. Flip An Image

Use this option when you need the person in the photo looking in the other direction, or you need the top of the image to be the bottom. Select Tools \rightarrow Transform Tools \rightarrow Flip from the main menu, or use the button on the toolbox. After selecting the flip tool from the toolbox, click inside the canvas. Controls in the Tool Options dockable let you switch between Horizontal and Vertical modes.

After selecting the flip tool from the toolbox, click inside the canvas. The tool flips the image horizontally. Use the options dialog to switch between horizontal and vertical. If it is not already displayed in the dock under the toolbox, double click the toolbox button. You can also use the **Ctrl** key to switch between horizontal and vertical. In the images below, all possible flips are demonstrated:

Figure 3.26. Example Image to Flip



Source image



Horizontal flipped image

3/28/25, 8:55 AM 4.8. Flip An Image



Vertical flipped image



Horizontal and vertical flipped image





Report a bug in GIMP Report a documentation error







4.9. Rotate An Image

4.9. Rotate An Image





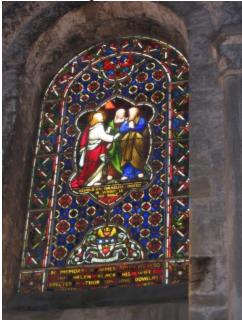
4.9. Rotate An Image

Images that are taken with digital cameras sometimes need to be rotated. To do this, select Image \rightarrow Transform \rightarrow Rotate 90° clockwise (or counter-clockwise) from the main menu. The images below demonstrate a 90 degrees CCW rotation.

Figure 3.27. Example for "Rotate An Image"



Source Image



Rotated image 90 degree CCW













4.10. Separating an Object From Its Background



4. Common Tasks



4.10. Separating an Object From Its Background

Figure 3.28. Object with Background



Sometimes you need to separate the subject of an image from its background. You may want to have the subject on a flat color, or keep the background transparent so you can use it on an existing background, or any other thing you have in mind. To do this, you must first use GIMP's selection tools to draw a selection around your subject. This is not an easy task, and selecting the correct tool is crucial. You have several tools to accomplish this:

• The "Free Select Tool" allows you to draw a border using either freehand or straight lines. Use this when the subject has a relatively simple shape. Read more about this tool here: Section 2.4, "Free Selection (Lasso)"





• The "Scissors Select tool" lets you select a freehand border and uses edge-recognition algorithms to better fit the border around the object. Use this when the subject is complex but distinct enough against its current background. Read more about this tool here: Section 2.8, "Scissors Select"

Figure 3.30. Scissors Select Tool





• **The "Foreground Select Tool"** lets you mark areas as "Foreground" or "Background" and refines the selection automatically. Read more about this tool here: <u>Section 2.5, "Foreground Select"</u>





4.10.1. Once you have selected your subject

Once you have selected your subject successfully, use Select \rightarrow Invert. Now, instead of the subject, the background is selected. What you do now depends on what you intended to do with the background:

To fill the background with a single color:
 Click the foreground color swatch (the top left of the two overlapping colored rectangles) in the toolbox and select the desired color. Next, use <a href="Section 3.4, "Bucket Fill" to replace the background with your chosen color."

Figure 3.32. Result of Adding a Plain Color Background



To make a black-and-white background while keeping the subject in color: Use Colors → Desaturate. In the dialog that opens, cycle between the modes and select the best-looking one, then click OK.

Figure 3.33. Result of Desaturating the Background









Chapter 4. What to do if you are stuck

Chapter 4. What to do if you are stuck



Part I. Getting Started



Chapter 4. What to do if you are stuck

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 - 3.4. The area showing the opened images at the top is missing
- 4. How to fix problems exporting images
 - 4.1. I am exporting to a jpeg image and my transparent area turned white or black
 - 4.2. I am exporting to a gif image and the colors changed

1. Introduction

All right, okay: you're stuck. You're trying to use one of the tools on an image, and nothing is happening, and nothing you try makes any difference. Your fists are starting to clench, and your face is starting to feel warm. Are you going to have to kill the program, and lose all your work? This sucks!

Well, hold on a second. This happens pretty frequently, even to people who've used GIMP for a long time, but generally the cause is not so hard to figure out and fix if you know where to look. Let's be calm, and go through a checklist that will probably get you GIMPing happily again.





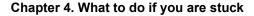


4.10. Separating an Object From Its Background



2. Common Causes of GIMP Non-Responsiveness

2. Common Causes of GIMP Non-Responsiveness



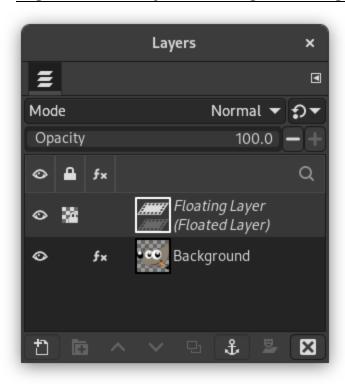




2. Common Causes of GIMP Non-Responsiveness

2.1. There is a floating selection

Figure 4.1. Layers dialog showing a floating selection.



Showing a floating selection that can be anchored (Ctrl + H) or turned into a new layer (Shift + Ctrl + N).

How to tell: If there is a floating selection, many actions are impossible until the floating section is anchored. To check, look at the <u>Layers Dialog</u>, shortcut <u>Ctrl</u>+<u>L</u> (making sure it's set to the image you're working on) and see whether the top layer is called "Floating Selection".

How to solve: Right click on the floating selection to open the Layer menu and select either Anchor Layer (shortcut **Ctrl** + **H**) to anchor the floating selection to the layer below it, or convert it into an ordinary layer by selecting To New Layer (shortcut **Shift** + **Ctrl** + **N**). If you need more help on how to do this, see <u>Floating Selections</u>.







Chapter 4. What to do if you are stuck



2.2. The selection is hidden

2.2. The selection is hidden



2. Common Causes of GIMP Non-Responsiveness



2.2. The selection is hidden

How to tell: If this is the problem, merely reading this will already have made you realize it, probably, but to explain in any case: sometimes the flickering line that outlines the selection is annoying because it makes it hard to see important details of the image, so GIMP gives you the option of hiding the selection, by unchecking Show Selection in the View menu. It is easy to forget that you have done this, though.

How to fix: Go to the View menu for the image and, if Show Selection is unchecked, click on it.







2. Common Causes of GIMP Non-Responsiveness



2.3. You are acting outside the selection

2.3. You are acting outside the selection



2. Common Causes of GIMP Non-Responsiveness



2.3. You are acting outside the selection

Figure 4.2. Fix selection using the "Select" menu

scicciton us
Ctrl+A
Shift+Ctrl+A
Ctrl+I
Shift+Ctrl+L
Shift+O
Shift+V
Shift+Q

From the Select menu choose "All" to make sure that everything is selected, choose "None" to remove the selection, or "Invert" to invert the selected area.

How to tell: You may have previously selected a part of your image, but now you are trying to work on another part that is not inside the selection. Look for the selection outline and check if it is where you want it to be. How to fix: There are a couple of possibilities.

- If you can't see any selection, there may be a very small one, or it is outside the visible area on your screen, or it can even be one that contains no pixels. If this is the case, either display the selection via View → Zoom → Zoom to Selection, or remove the selection via Select → None or the shortcut Shift + Ctrl + A.
- If you can see a selection and thought you were inside it, it might be inverted from what you think. The easiest way to tell is to hit the Quick Mask button: the selected area will be clear and the unselected area will be masked. If this is the problem, you can solve it by choosing "Invert" in the Select menu (after turning the "Quick Mask" off if you still have that enabled).



Note

If doing this has destroyed a selection that you wanted to keep, use "Undo" ($\lceil \textbf{Ctrl} \mid + \mid \textbf{Z} \mid$) to restore it, and then we can continue to figure out

what the problem is.







2.2. The selection is hidden



2.4. The active drawable is not visible

2.4. The active drawable is not visible

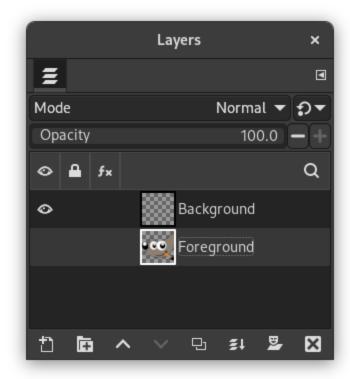


2. Common Causes of GIMP Non-Responsiveness



2.4. The active drawable is not visible

Figure 4.3. Layer is invisible



Layers dialog with visibility off for the active layer.

How to tell: The Layers dialog gives you ability to toggle the visibility of each layer on or off. Look at the <u>Layers Dialog</u>, and see if the layer you are trying to work on is active (i.e., darkened) and has an eye symbol to the left of it. If not, this is your problem.

How to fix: If your intended target layer is not active, click on it in the Layers dialog to activate it. If none of the layers are active, the active drawable might be a channel—you can look at the <u>Channels Dialog</u> to see. This does not change the solution, though. If the eye symbol is not visible, click in the Layers dialog at the left edge to toggle it: this should make the layer visible. See the Help section for the <u>Layers Dialog</u> if you need more help.







2.3. You are acting outside the selection



2.5. The active drawable is transparent

2.5. The active drawable is transparent

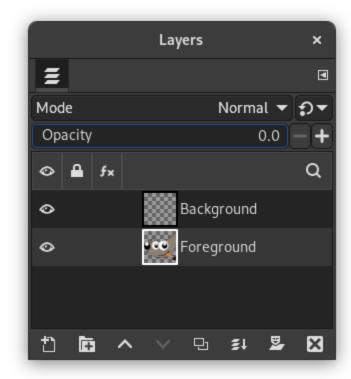


2. Common Causes of GIMP Non-Responsiveness



2.5. The active drawable is transparent

Figure 4.4. Layer opacity set to zero



Layers dialog with opacity set to zero for the active layer.

How to tell: When the opacity of a layer is 0, you cannot see anything you draw on it. Look at the Opacity slider at the top of the Layers Dialog and check the value next to it. If it is 0 or another very low value, that is your problem. How to fix: Move or click on the slider to change it to the desired value.









2.4. The active drawable is not visible



2.6. You are trying to act outside the layer

2.6. You are trying to act outside the layer



2. Common Causes of GIMP Non-Responsiveness



2.6. You are trying to act outside the layer

How to tell: In GIMP, layers don't need to have the same dimensions as the image: they can be larger or smaller. If you try to paint outside the borders of a layer, nothing happens. To see if this is the case, look for a black-and-yellow dashed rectangle that does not enclose the area you're trying to draw at.

How to fix: You need to enlarge the layer. There are two commands near the bottom of the Layer menu that will let you do this: Layers to Image Size, which sets the layer bounds to match the image borders; and Layer Boundary Size, which brings up a dialog that allows you to set the layer dimensions to whatever you please.







2.5. The active drawable is transparent



2.7. You are trying to act on a layer group

2.7. You are trying to act on a layer group

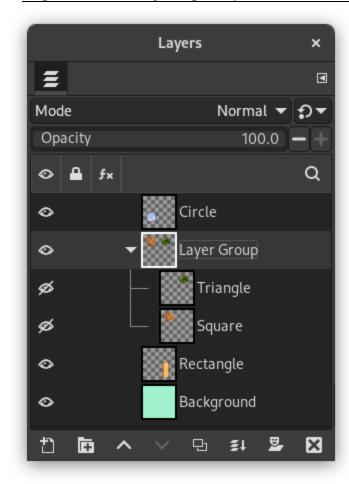


2. Common Causes of GIMP Non-Responsiveness



2.7. You are trying to act on a layer group

Figure 4.5. Layer group selected



Layers dialog where a layer group is selected.

How to tell: Check the <u>Layers Dialog</u> to see if the active layer is actually a <u>Layer group</u>. When a layer group is not empty, a small icon

or

appears in front of the layer group's thumbnail and name. Most actions don't work on a layer group, in which case an error message will show up: "Cannot paint on layer groups."

How to fix: You need to make a layer active that is not a layer group. Select a layer by clicking it in the Layers Dialog. If the active layer group has a + sign in front of it, it is collapsed. You can click it to expand and show the individual layers inside that group.



2.6. You are trying to act outside the layer





2.8. The image is in indexed color mode.

2.8. The image is in indexed color mode.



2. Common Causes of GIMP Non-Responsiveness



2.8. The image is in indexed color mode.

How to tell: GIMP can handle three different color modes: RGB(A), Grayscale and Indexed. The indexed color mode uses a colormap, where all colors used in the image are indexed. The color picker in GIMP however, lets you choose RGB colors. That means, if you try to paint with a different color than is indexed in the colormap, you can end up with the wrong color.

How to fix: If possible, use the RGB color mode to paint on images. You can verify and select another color mode from the Mode menuitem in the Image menu. If you need to use indexed mode you can pick the color you want to use from the Colormap Dialog.







2.7. You are trying to act on a layer group



2.9. No visible effect when trying to use a brush, eraser or other tool

2.9. No visible effect when trying to use a brush, eraser or other tool



2. Common Causes of GIMP Non-Responsiveness



2.9. No visible effect when trying to use a brush, eraser or other tool

How to tell: You are trying to use the brush or eraser but you are not seeing anything changing. How to fix: Check the <u>Tool Options</u> and make sure that Opacity is not set to 0.







2.8. The image is in indexed color mode.



2.10. No visible effect when trying to use the move tool, rotate or other transform tool

2.10. No visible effect when trying to use the move tool, rotate or other transform tool



2. Common Causes of GIMP Non-Responsiveness



2.10. No visible effect when trying to use the move tool, rotate or other transform tool

How to tell: You are trying to move (or perform a transformation) on a layer but you do not see anything changing. How to fix: Check the <u>status bar</u> to see if there is a message telling you what is happening, next check <u>Tool Options</u> and make sure that the tool you are using is not set to work on a Selection or Path. These little buttons are at the top of the <u>Tool Options for Transform Tools</u>.







2.9. No visible effect when trying to use a brush, eraser or other tool



2.11. Eraser and brushes no longer work

2.11. Eraser and brushes no longer work



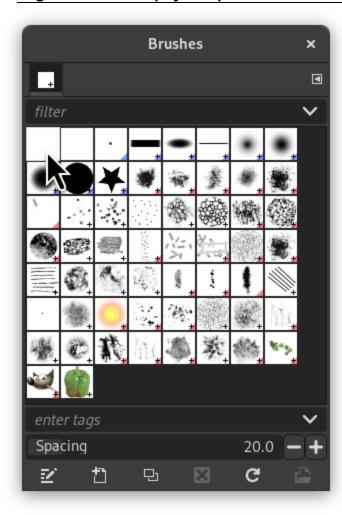
2. Common Causes of GIMP Non-Responsiveness



2.11. Eraser and brushes no longer work

You have selected the clipboard brush and the clipboard is empty.

Figure 4.6. Empty Clipboard Brush



How to tell: You are trying to use a brush or the eraser and nothing is happening. How to fix: Check the <u>Brush Dialog</u> to see which brush is currently in use. If it is the Clipboard Brush and it shows an empty rectangle then select a different brush to use.







2.10. No visible effect when trying to use the move tool, rotate or other transform tool

Report a bug in GIMP Report a documentation error



2.12. Eraser does not make area transparent

2.12. Eraser does not make area transparent



2. Common Causes of GIMP Non-Responsiveness



2.12. Eraser does not make area transparent

How to tell: You are trying to use the eraser to remove all color but instead of a transparent area appearing it turns into the background color (usually white).

How to fix: Check the active layer in the <u>Layers Dialog</u>: right click on it to open a menu and see if Add Alpha Channel is enabled. If it is, then your layer has no alpha channel: click that menu item to add an alpha channel. With that fixed, you will be able to erase to transparency.







2.11. Eraser and brushes no longer work



2.13. Unexpected colors when trying to use a brush or eraser

2.13. Unexpected colors when trying to use a brush or eraser



2. Common Causes of GIMP Non-Responsiveness



2.13. Unexpected colors when trying to use a brush or eraser

How to tell: You are trying to use the brush or eraser but the outcome is not as you expected. How to fix: Check whether the layer you are painting on has a Layer Mask. If there is, you may be painting on the Layer Mask instead of the Layer itself. In that case click the Layer to make that the active painting area. Another similar possibility is that a Channel is active instead of a Layer. In that case click a layer in the Layers Dialog to make a layer active.







2.12. Eraser does not make area transparent



2.14. The crop tool leaves an empty area after cropping

2.14. The crop tool leaves an empty area after cropping



2. Common Causes of GIMP Non-Responsiveness



2.14. The crop tool leaves an empty area after cropping

How to tell: After cropping using the Crop Tool the image canvas is still using the old size and only the visible part was cropped.

How to fix: Go to the Tool Options and make sure that Delete cropped pixels is checked.







<u>2.13. Unexpected colors when trying to use a brush or eraser</u>



2.15. I've been waiting for a long time and GIMP is not responding

2.15. I've been waiting for a long time and GIMP is not responding



2. Common Causes of GIMP Non-Responsiveness



2.15. I've been waiting for a long time and GIMP is not responding

How to tell: your mouse cursor is spinning or the window is saying it is not responding and you can't do anything in GIMP.

How to fix: some filters and other operations can take a long time, especially on large images or if your computer does not have a lot of free memory. In these cases, you may just need more patience. It can sometimes help to reduce the part you are working on by making a selection around a specific area.

GIMP, just like any other software, is not perfect. You may have found a bug. The best thing to do is report it, since you may be the first to encounter it. Not reporting it may mean it won't get fixed until someone else reports it. First check to make sure that you are using the latest version of GIMP; if not update and check if the problem is still there. If it is, check if the issue is already known by searching our <u>list of issues</u> (also check the closed issues, fixed issues get closed even if there is no new version available yet). If you don't see it there, please open a new issue, making sure to give us all details like your Operating System, GIMP version, what tool or filter you were using and what exactly happened. Adding a screenshot, or uploading the image you are using can also be helpful in certain cases.







2.14. The crop tool leaves an empty area after cropping





2.16. General guidelines on what to check if you are stuck

4

2.16. General guidelines on what to check if you are stuck

2. Common Causes of GIMP Non-Responsiveness



2.16. General guidelines on what to check if you are stuck

Check the status bar to see if there is a message telling you what is happening.



Tip

If you add the <u>Error Console</u> to one of your docks most of the warnings will appear there. This can make it easier to spot any problems.

- Check the <u>Tool Options</u> and make sure that all settings there have expected values, or else try to <u>reset to</u> default values.
- Check which Image Mode your image is using. Some operations have limitations when using Indexed mode.
- Check if a selection is active and if needed remove the selection.
- Check the <u>Layers Dialog</u> and make sure the correct layer is active, that the opacity, blending mode and layer attributes are set as expected.







2.15. I've been waiting for a long time and GIMP is not responding



3. How to fix missing windows and dialogs



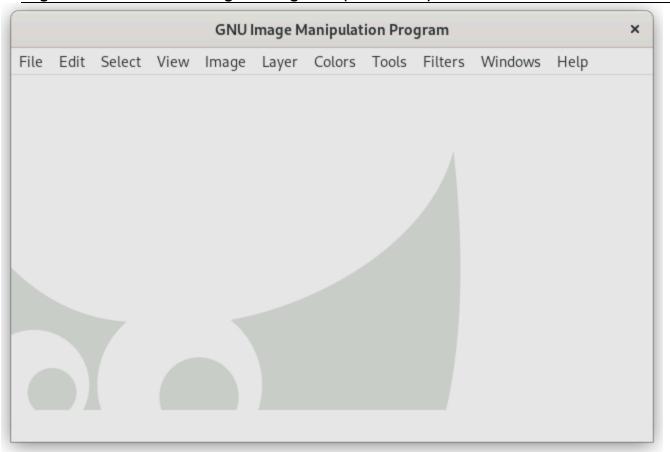
How to fix missing windows and dialogsChapter 4. What to do if you are stuck



3. How to fix missing windows and dialogs

3.1. All tool windows are missing

Figure 4.7. Tool dialogs are gone (use TAB)



GIMP's main window with hidden tool dialogs using TAB.

When you only see the image window and none of the tool windows, you most likely hit **TAB** by accident. This is the default shortcut to show or hide all docks.

To fix this just press **TAB** again. Alternatively you can use Windows → Hide Docks to toggle between show and hide.



Note

Sometimes using **TAB** to hide the tool dialogs doesn't work. This happens when the focus is inside the tool dialogs instead of in the image. To remedy this, put the focus on the image, or use the menu command mentioned above.









2.16. General guidelines on what to check if you are stuck

3.2. Tool options dialog is missing

3.2. Tool options dialog is missing

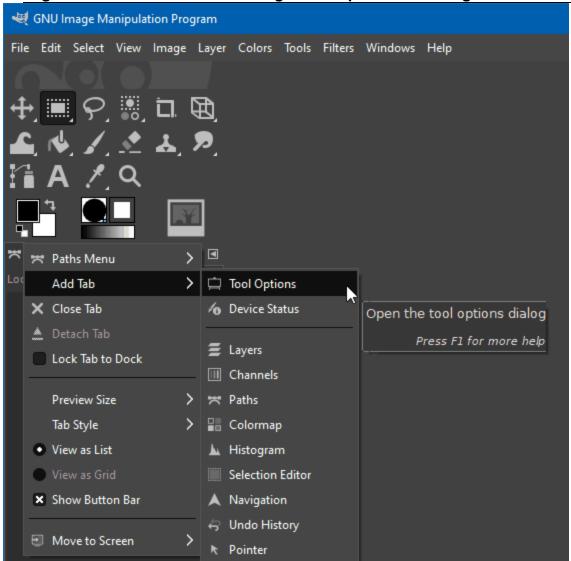


3. How to fix missing windows and dialogs



3.2. Tool options dialog is missing

Figure 4.8. Restore missing tool options dialog



Restore missing tool options dialog using the Add Tab menu item.

The <u>Tool Options Dialog</u> can get closed by accident. To get it back click on the <u>tab menu button</u> ■ to open the menu. From that menu choose Add Tab and then Tool Options.

You can also use Windows \rightarrow Dockable Dialogs \rightarrow Tool Options. In this case, the dialog may turn up in a different dock than the one you want. If that happens, grab the tab that says Tool Options and drag it to where you need it.



Note

To make sure that this or any other dialog doesn't get moved or closed by accident, you can lock it to the dock it is in. To enable this, click on the tab menu button on the top right of the dock. This open a menu where you should choose Lock Tab to Dock (unless it is already checked).



3. How to fix missing windows and dialogs

Report a bug in GIMP Report a documentation error







3.3. Some of the tool icons are missing

3.3. Some of the tool icons are missing



3. How to fix missing windows and dialogs



3.3. Some of the tool icons are missing

Tools with a similar function are grouped together by default. To see the other icons in a group move your mouse over an icon. Depending on a preferences setting (see below) you can see the other icons in a group by just hovering, or after clicking on the icon. The little triangle in the bottom right corner of tool icons tells us that there are more icons in this group.

The Toolbox preferences has an option to disable grouping, but also to change the groups or make new ones.







3.2. Tool options dialog is missing



3.4. The area showing the opened images at the top is missing

3.4. The area showing the opened images at the top is missing



3. How to fix missing windows and dialogs



3.4. The area showing the opened images at the top is missing

How to tell: You are using <u>single-window mode</u> and the tab bar at the top, that shows which images you have opened, is missing.

How to fix: Go to menu Windows → Show Tabs and make sure that Show Tabs is checked.







3.3. Some of the tool icons are missing



4. How to fix problems exporting images

4. How to fix problems exporting images



Chapter 4. What to do if you are stuck



4. How to fix problems exporting images

4.1. I am exporting to a jpeg image and my transparent area turned white or black

When exporting images, you need to be aware that most image formats have limitations. A limitation of jpeg images is, that it does not support transparency. When exporting to jpeg, GIMP fills the transparent areas with the background color, which by default is white.

To fix this, you will have to choose a different image format that does support transparency, such as png or tiff.







3.4. The area showing the opened images at the top is missing



4.2. I am exporting to a gif image and the colors changed

4.2. I am exporting to a gif image and the colors changed



4. How to fix problems exporting images



4.2. I am exporting to a gif image and the colors changed

When exporting images, you need to be aware that most image formats have limitations. A limitation of gif images is, that it supports a maximum of 256 colors. For animated gif, this is 256 colors per frame; however, GIMP does not support exporting each frame with a different set of 256 colors. When exporting to gif, GIMP reduces the number of colors in your image to 256 by combining more or less similar colors together. This can cause noticeable changes in your image.

To fix this, you will have to choose a different image format that does support more colors; or convert your image to Indexed Mode and manually adjust any colors before exporting to gif.







4. How to fix problems exporting images



Part II. How do I Become a GIMP Wizard?

Part II. How do I Become a GIMP Wizard?





Part II. How do I Become a GIMP Wizard?

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4.2. I am exporting to a gif image and the colors changed



Chapter 5. Getting Images into GIMP



Part II. How do I Become a GIMP Wizard?



Chapter 5. Getting Images into GIMP

Table of Contents

- 1. Image Types
- 2. Creating new Files
- 3. Opening Images

This chapter is about getting images into GIMP. It explains how to create new images, how to load images from files, how to scan them and how to make screenshots.

But first we want to introduce you to the general structure of images in GIMP.

1. Image Types

It is tempting to think of an *image* as something that corresponds with a single display window, or to a single file such as a <u>JPEG</u> file. In reality, however, a GIMP image is a complicated structure, containing a stack of layers plus several other types of objects: a selection mask, a set of channels, a set of paths, an "undo" history, etc. In this section we take a detailed look at the components of a GIMP image, and the things that you can do with them. The most basic property of an image is its *mode*. There are three possible modes: RGB, grayscale, and indexed. RGB stands for Red-Green-Blue, and indicates that each point in the image is represented by a "red" level, a "green" level, and a "blue" level; representing a full-color image. Each color channel has 256 possible intensity levels. More details in Color Models

In a grayscale image, each point is represented by a brightness value, ranging from 0 (black) to 255 (white), with intermediate values representing different levels of gray.

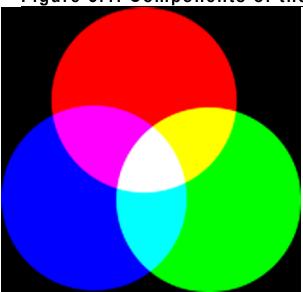
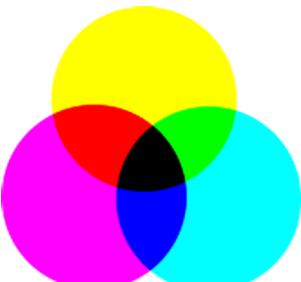


Figure 5.1. Components of the RGB and CMY Color Model

In the RGB Color Model, mixing Red, Green and Blue gives White, which is what happens on your screen.

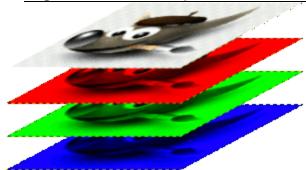


In the CMY(K) color model, mixing Cyan, Magenta and Yellow gives Black, which is what happens when you print on a white paper. The printer will actually use the black cartridge for economical reasons and better color rendering.

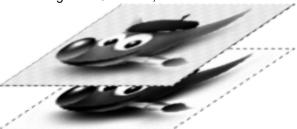
Conceptually, the difference between a grayscale image and an RGB image is the number of "color channels": a grayscale image has one; an RGB image has three. An RGB image can be thought of as three superimposed grayscale images, one colored red, one green, and one blue.

Actually, both RGB and grayscale images have one additional color channel called the *alpha* channel, which represents opacity. When the alpha value at a given location in a given layer is zero, the layer is completely transparent (you can see through it), and the color at that location is determined by what lies underneath. When alpha is maximal (255), the layer is opaque (you cannot see through it), and the color is determined by the color of the layer. Intermediate alpha values correspond to varying degrees of transparency / opacity: the color at the location is a proportional mixture of color from the layer and color from underneath.

Figure 5.2. Example of an image in RGB and Grayscale mode



An image in RGB mode, with the channels corresponding to Red, Green and Blue.



An image in Grayscale mode, with the channel corresponding to Luminosity.

In GIMP, in every color channel, including the alpha channel, possible values have a range depending on the image precision: 0 to 255 for a color depth of 8 bits. GIMP can load 16 and 32 bits images, and this range can be much larger.

Figure 5.3. Example of an image with alpha channel



Red channel



Green channel



Blue channel



The Alpha channel shows the image area which is transparent.



A color image in RGB mode with an Alpha channel.

The third type, *indexed* images, is a bit more complicated to understand. In an indexed image, only a limited set of discrete colors are used, usually 256 or less (so, this indexed mode can be applied only to images with 8 bits precision). These colors form the "colormap" of the image, and each point in the image is assigned a color from the colormap. Indexed images have the advantage that they can be represented inside a computer in a way which consumes relatively little memory. As time goes on, they are used less and less, but they are still important enough to be worth supporting in GIMP. (Also, there are a few important kinds of image manipulation that are easier to implement with indexed images than with continuous-color RGB images.)

Some very commonly used types of files (including <u>GIF</u> and <u>PNG</u>) produce indexed images when they are opened in GIMP. Many of GIMP's tools don't work very well on indexed images—and many filters don't work at all—because of the limited number of colors available. Because of this, it is usually best to convert an image to RGB mode before working on it. If necessary, you can convert it back to indexed mode when you are ready to save it.

GIMP makes it easy to convert from one image type to another, using the Mode command in the Image menu.

GIMP makes it easy to convert from one image type to another, using the <u>Mode</u> command in the Image menu. Some types of conversions, of course (RGB to grayscale or indexed, for example) lose information that cannot be regained by converting back in the other direction.



Note

If you are trying to use a filter on an image, and the filter is disabled in the menu, usually the cause is that the image (or, more specifically, the layer) you are working on is the wrong type. Many filters can't be used on indexed images. Some can be used only on RGB images, or only on grayscale images. Some also require the presence or absence of an alpha channel. Usually the fix is to convert the image to a different type, most commonly RGB.







Part II. How do I Become a GIMP Wizard?



2. Creating new Files

3/28/25, 9:03 AM 2. Creating new Files

2. Creating new Files



Chapter 5. Getting Images into GIMP



2. Creating new Files

Use File \rightarrow New to open the Create a new image dialog. Modify the initial width and height of the file or use the standard values, then create a new image file. More information about the Create a new image dialog can be found in <u>Section 2.2, "New..."</u>.







Chapter 5. Getting Images into GIMP



3. Opening Images

3. Opening Images



Chapter 5. Getting Images into GIMP



3. Opening Images

There are several ways of opening an existing image in GIMP:

Open Image dialog

The most obvious way to open an existing image is the Open Image dialog. Use File → Open..., or Ctrl + O to open the Open Image dialog. This dialog allows you to navigate to the image you want to use, select its name, and then use the Open button to load the image. For details on how to use this dialog, see the above link.

The Open Image dialog provides several features to help you navigate quickly to a file. Perhaps the most important is the ability to create "bookmarks", for folders that you use often.

Open Location

You can directly open an image from an online or network location if you know the URI (i.e., a web or network address) for the image. Select File \rightarrow Open Location... from the main menu. For more details, see the Open Location... documentation.

Open Recent

To open an image that was recently used in GIMP, select File \rightarrow Open Recent from the main menu. This displays a submenu of the most recently opened images that you can click to open the desired image. At the bottom of this submenu is the <u>Document History</u> command if you need to reopen an image from longer ago. See also <u>Open Recent</u>.

File Manager

If you have associated an image file type with GIMP, either when you installed GIMP or later, then you can navigate to the file using a file manager (such as Nautilus or Konqueror in Linux, or Windows Explorer in Windows), and once you have found it, double-click on the file. If properly configured, the image will open in GIMP. Most file managers also support drag and drop (see below).

Drag and Drop

You can "Drag and drop" one or more images onto the <u>Toolbox</u>, or, if you haven't opened any images yet, the empty image window, to open the dragged image or images.

You can also drag one or more images into an open GIMP image. The dropped image or images will be added to the open image as a new layer, or set of layers.

Many applications support dragging and dropping an image into GIMP; for example, drag an image from Firefox and drop it onto GIMP's toolbox.

Copy and Paste

Use File \rightarrow Create \rightarrow From Clipboard (see <u>From Clipboard</u>) to create a new image from the clipboard; alternatively, you can use Edit \rightarrow Paste as \rightarrow Paste as New Image (see <u>Paste as New Image</u>). Many applications support copying an image to the clipboard that can then be pasted into GIMP. Many operating systems support copying screen content to the clipboard.

Print Screen typically copies the screen content to the clipboard. Print screen is not universally supported, and just because your operating system can copy an image to the clipboard, does not mean that GIMP can use the image from the clipboard. Your best bet is to try it and see if it works.

Image Browser

There are many image management applications that can be used to browse and manage your images. They usually work similar to a normal file browser in that you can double click images to load them in their default application; or you can use drag-and-drop to drop one or more images on GIMP's toolbox.

Example applications on Linux are: gThumb; see the gThumb website [GTHUMB]. Another similar application is Geeqie [GEEQIE].

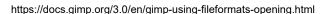












Chapter 6. Getting Images out of GIMP



Part II. How do I Become a GIMP Wizard?



Chapter 6. Getting Images out of GIMP

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- 2.1. Images with an Optimal Size/Quality Ratio
- 2.2. Reducing the File Size Even More
- 2.3. Saving Images with Transparency

1. Files

GIMP is capable of reading and writing a large variety of graphics file formats. With the exception of GIMP's native XCF file format, file handling is done by plug-ins. This makes it relatively easy to extend GIMP to support new file types when the need arises.

1.1. Save / Export Images



Note

When you open an image, let's say in JPG or PNG file format, it is imported into GIMP's own XCF format, as a new project. For example, a "sunflower.png" image will be loaded as "*[sunflower] (imported)-1.0 (indexed color, 1 layer)". The leading asterisk indicates that this file has been changed. This image can be saved as "sunflower.xcf" by using the **Save** command. If you need your image in another format, you should use the **Export** command.

When you are finished working with an image, you will save the results. In fact, it is often a good idea to save at intermediate stages too. GIMP is a pretty robust program, but on rare occasions crashes have happened. GIMP's native format XCF is special. It is the only format that can store *everything* about an image (with the exception of "undo" information). This is the reason that saving can only be done in this format. It makes the XCF format especially suited for storing intermediate results, and for saving images to be re-opened later in GIMP. XCF files are not readable by most other programs that display images. Once you have finished editing your image, you can export it to the format of your choice. GIMP supports a wide range of formats. Most file formats that can be imported, can also be used for exporting.

1.2. File Formats

There are several commands for *saving* and *exporting* images. They are listed in the section covering the <u>File Menu</u>. More information on how to use them can be found there.

GIMP allows you to *export* the images you create in a wide variety of formats. It is important to realize that the only format capable of saving *all* of the information in an image, including layers, transparency, etc., is GIMP's native XCF format. Every other format preserves some image properties and loses others. It is up to you to understand the capabilities of the format you choose.

Exporting an image does not modify the image itself, so you do not lose anything by exporting. See Export file.



Note

When you close an image (possibly by quitting GIMP), you are warned if the image has been changed without subsequently being saved (an asterisk is in front of the image name in the title bar of the main window).



3. Opening Images





2. Preparing your Images for the Web

4

2. Preparing your Images for the Web

Chapter 6. Getting Images out of GIMP



2. Preparing your Images for the Web

One of the most common uses for GIMP, is to prepare images for web sites. This means that images should look as nice as possible while keeping the file size as small as possible. This step-by-step guide demonstrates how to create small files with minimal loss of image quality.

2.1. Images with an Optimal Size/Quality Ratio

An optimal image for the web depends upon the image type and the file format. Use <u>JPEG</u> for Photographs because they usually have many colors and great detail. An image with fewer colors, such as a button, icon, or screenshot, is better suited to the <u>PNG</u> format.

1. First, open the image as usual.

Figure 6.1. Image of Wilber (the GIMP mascot) opened in RGBA mode



2. The image is now in RGB mode, with an additional <u>Alpha channel</u> (RGBA). There is usually no need to have an alpha channel for your web image. You can remove the alpha channel by <u>flattening the image</u>. A photograph rarely has an alpha channel, so the image will open in RGB mode rather than RGBA mode; and you won't have to remove the alpha channel.



Note

If the image has a soft transition into the transparent areas, you should not remove the alpha channel, since the information used for the transition will not be saved in the file. To export an image with transparent areas that do not have a soft transition, (similar to GIF), remove the alpha channel.

3. After you have flattened the image, export the image in the PNG format for your web site.



Note

You can export your image in the PNG format with the default settings. Always using maximum compression when creating the image. Maximum compression has no effect on image quality or the time required to display the image, but it does take longer to export. A JPEG image, however, loses quality as the compression is increased. If your image is a photograph with lots of colors, you should use jpeg. The main thing is to find the best tradeoff between quality and compression. You can find

more information about this topic in Section 5.8, "Export Image as $\underline{\mathsf{JPEG}}$ ".



1



Chapter 6. Getting Images out of GIMP



2.2. Reducing the File Size Even More





2. Preparing your Images for the Web



2.2. Reducing the File Size Even More

If you want to reduce the size of your image a bit more, you could convert your image to Indexed mode. That means that all of the colors will be reduced to only 256 values. Do not convert images with smooth color transitions or gradients to indexed mode, because the original smooth gradients are typically converted into a series of bands. Indexed mode is not recommended for photographs because after the conversion, they typically look coarse and grainy.

Figure 6.2. The indexed image



An indexed image can look a bit grainy. The left image is Wilber in its original size, the right image is zoomed in by 300 percent.

- 1. Use the command described in <u>Section 6.3, ""Mode" Submenu"</u> to convert an RGB image to indexed mode.
- After you convert an image to indexed mode, you are once again able to export the image in PNG format.









repairing your images for the fiveb

Report a bug in GIMP Report a documentation error



2.3. Saving Images with Transparency

4

2.3. Saving Images with Transparency

2. Preparing your Images for the Web



2.3. Saving Images with Transparency

There are two different approaches used by graphic file formats for supporting transparent image areas: simple binary transparency and alpha transparency. Simple binary transparency is supported in the <u>GIF</u> format; one color from the indexed color palette is marked as the transparent color. Alpha transparency is supported in the <u>PNG</u> format; the transparency information is stored in a separate channel, the <u>Alpha channel</u>.



Note

The GIF format is rarely used because PNG supports all the features of GIF with additional features (e.g., alpha transparency). Nevertheless, GIF is still used for animations.

Procedure 6.1. Creating an Image with Transparent Areas (Alpha Transparency)

1. First of all, we will use the same image as in the previous tutorials, Wilber the GIMP mascot.





- 2. To export an image with alpha transparency, you must have an alpha channel. To check if the image has an alpha channel, go to the <u>Channels Dialog</u> and verify that an entry for "Alpha" exists, besides Red, Green and Blue. If this is not the case, <u>add a new alpha channel</u> from the layers menu; Layer+Transparency → Add Alpha Channel.
- 3. The original XCF file contains background layers that you can remove. GIMP comes with standard filters that supports creating gradients; look under Filters + Light and Shadow. You are only limited by your imagination. To demonstrate the capabilities of alpha transparency, a soft glow in the background around Wilber is shown.
- 4. After you're done with your image, you can export it in PNG format.

Figure 6.4. The Wilber image with transparency



Mid-Tone Checks in the background layer represent the transparent region of the exported image while you are working on it in GIMP.







2.2. Reducing the File Size Even More



Chapter 7. Painting with GIMP

Chapter 7. Painting with GIMP



Part II. How do I Become a GIMP Wizard?



Chapter 7. Painting with GIMP

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1. The Selection

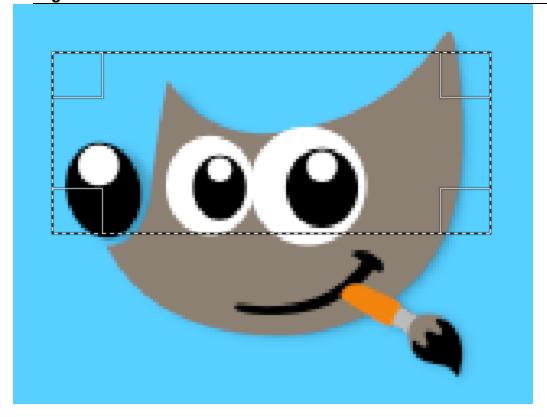
Often when you operate on an image, you only want part of it to be affected. In GIMP, you make this happen by selecting that part. Each image has a selection associated with it. Most, but not all, GIMP operations act only on the selected portions of the image.

Figure 7.1. How would you isolate the tree?



There are many, many situations where creating just the right selection is the key to getting the result you want, and often it is not easy to do. For example, in the above image, suppose I want to cut the tree out from its background, and paste it into a different image. To do this, I need to create a selection that contains the tree and nothing but the tree. It is difficult because the tree has a complex shape, and in several spots is hard to distinguish from the objects behind it.

Figure 7.2. Selection shown as usual with dashed line.



Now here is a very important point, and it is crucial to understand this. Ordinarily when you create a selection, you see it as a dashed line enclosing a portion of the image. The common, not entirely accurate, idea you could get from this, is that the selection is a sort of container, with the selected parts of the image inside, and the unselected parts outside. Although this concept of selection is okay for many purposes, it is not entirely correct. Actually the selection is implemented as a *channel*. In terms of its internal structure, it is identical to the red, green, blue, and alpha channels of an image. Thus, the selection has a value defined at each pixel of the image, ranging between 0 (unselected) and 255 (fully selected). The advantage of this approach is that it allows some pixels to be

partially selected, by giving them intermediate values between 0 and 255. As you will see, there are many situations where it is desirable to have smooth transitions between selected and unselected regions.

What, then, is the dashed line that appears when you create a selection?

The dashed line is a *contour line*, dividing areas that are more than half selected from areas that are less than half selected.





While looking at the dashed line that represents the selection, always remember that the line only tells part of the story. If you want to see the selection in full detail, the easiest way is to click the <u>Quick Mask button</u> in the lower left corner of the image window. This causes the selection to be shown as a translucent overlay atop the image. Selected areas are unaffected; unselected areas are reddened. The more completely selected an area is, the less red it appears.

Many operations work differently in Quick Mask mode, as mentioned in the Quick Mask overview. Use the Quick Mask button in the lower left corner of the image window to toggle Quick Mask mode on and off.

Figure 7.4. Same selection in Quick Mask mode after feathering.



1.1. Feathering

With the default settings, the basic selection tools, such as the Rectangle Select tool, create sharp selections. Pixels inside the dashed line are fully selected, and pixels outside completely unselected. You can verify this by toggling Quick Mask: you see a clear rectangle with sharp edges, surrounded by uniform red. Use the "Feather edges" checkbox in the Tool Options to toggle between graduated selections and sharp selections. The feather radius, which you can adjust, determines the distance over which the transition occurs.

If you are following along, try this with the Rectangle Select tool, and then toggle Quick Mask. You will see that the clear rectangle has a fuzzy edge.

Feathering is particularly useful when you are cutting and pasting, so that the pasted object blends smoothly and unobtrusively with its surroundings.

It is possible to feather a selection at any time, even if it was originally created as a sharp selection. Use Select \rightarrow Feather from the main menu to open the Feather Selection dialog. Set the feather radius and click OK. Use Select \rightarrow Sharpen to do the opposite—sharpen a graduated selection into an all-or-nothing selection.



Note

For technically oriented readers: feathering works by applying a Gaussian blur to the selection channel, with the specified blurring radius.

1.2. Making a Selection Partially Transparent

You can set layer opacity, but you cannot do that directly for a selection. It is quite useful to make the image of a glass transparent. Use the following methods to set the layer opacity:

- For simple selections, use the Eraser tool with the desired opacity.
- For complex selections: use Select → Float to create a floating selection. This creates a new layer with the selection called "Floating Selection" (Section 4.5, "Float"). Set the opacity slider in the Layers dialog to the desired opacity. Then anchor the selection: outside the selection, the mouse pointer includes an anchor. When you click while the mouse pointer includes the anchor, the floating selection disappears from the Layers dialog and the selection is at the right place and partially transparent (anchoring works this way only if a selection tool is activated: you can also use the Anchor Layer command in the context menu by right clicking on the selected layer in the Layers dialog).

And, if you use this function frequently: $\c Ctrl - \c C$ to copy the selection, $\c Ctrl - \c V$ to paste the clipboard as a floating selection, and Layer \rightarrow New Layer... to turn the selection into a new layer. You can adjust the

opacity before, or after creating the new layer.

- Another way: use Layer → Mask → Add Layer Masks... to add a layer mask to the layer with the selection, initializing it with the selection. Then use a brush with the desired opacity to paint the selection with black, i.e. paint it with transparency. Then Layer → Mask → Apply Layer Mask. See Section 2.1.4, "Layer masks".
- To make the solid background of an image transparent, add an Alpha channel, and use the Magic Wand to select the background. Then, use the Color Picker tool to select the background color, which becomes the foreground color in Toolbox. Use the Bucket Fill tool with the selected color. Set the Bucket Fill mode to "Color Erase", which erases pixels with the selected color; other pixels are partially erased and their color is changed.

The simplest method is to use Edit → Clear, which gives complete transparency to a selection.



1



2.3. Saving Images with Transparency



2. Creating and Using Selections

2. Creating and Using Selections







2. Creating and Using Selections

2.1. Moving or Resizing a Selection

Rectangular and elliptical selections have two modes. The default mode has handles on the selection. These handles can be used to resize the selection. Dragging from inside the selection, but not inside the handles, moves the selection. If you click the selection or press the **Enter** key, the handles disappear leaving only the dotted selection outline (marching ants). You can return to the mode with handles by clicking inside the selection again. If you click-and-drag the selection without handles, you create a new selection. The other selection tools do not have this division in two modes.

2.1.1. Moving selections using the Rectangle and Ellipse Select tools

As mentioned above, the "Rectangle Select" and "Ellipse Select" tools by default show a selection frame with handles. It is possible to change the size and location of the selection, but also to move the selection including the layer contents.

2.1.1.1. Moving and resizing the selection outline

Figure 7.5. Moving the selection outline





Moving or resizing the selection frame, without moving the image contents, can be done both with the mouse and with the keyboard.

To move the selection with the mouse, click inside the selection in an area that doesn't show one of the handles. Then drag it with the mouse towards your intended location.

To move the selection with the keyboard, it is currently required that the mouse pointer is inside the selection frame, or it won't work. Press and hold Alt (or Ctrl + Alt), to move one pixel at a time. To move 25 pixels at a time add the Shift key to the above combination.

To resize the selection with the mouse, place the mouse pointer in the handle area where you want to resize, and then click-drag in the desired direction. To resize in one direction, use the middle handles; to resize two neighboring directions, use the handles in one of the corners.

To resize using the keyboard, move the mouse pointer inside the handles along the edges of the selection frame, and then use the keyboard shortcuts mentioned above for moving.

2.1.1.2. Moving the selection with the image contents

Figure 7.6. Moving a selection and its contents, emptying the original location



To move the selection contents (i.e. the part of the layer inside the selection), you can press Ctrl + Alt and click-and-drag the selection. The original location of the selected part of the layer will be emptied (i.e. filled with the current background color).

Note that this action will create a floating layer that needs to be <u>anchored</u> to the layer below, or turned into <u>a new layer</u>.

Figure 7.7. Moving a selection with a copy of the layer contents



To move the selection contents without changing the original, use **Shift** + **Alt** and click-and-drag the selection. The original location of the selected part of the layer will stay the same while you move a copy. Note that this action will create a floating layer that needs to be <u>anchored</u> to the layer below, or turned into <u>a new layer</u>.



Note

On some systems, you must push Alt before Shift or Ctrl. On these systems, pressing Shift or Ctrl first, causes GIMP to enter a mode that adds or subtracts from the current selection. After doing that, the Alt key is ineffective!

2.1.2. Moving using other Selection Tools

The other selection tools (Free Select, Fuzzy Select, By Color Select, etc.) have no handles. Using click-and-drag doesn't move these selections. To move their contents, as with rectangular and elliptical selections, you have to press the Ctrl + Alt or Shift + Alt keys and then use click-and-drag.

If you use keyboard arrow keys instead of click-and-drag, you move only the selection outline.

2.1.3. A different method of moving a selection

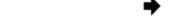
You can also use a more roundabout method to move a selection. Make the <u>selection floating</u>. Then you can move its content using the <u>Move</u> tool, emptying the original location, by click-and-dragging or keyboard arrow keys.



Chapter 7. Painting with GIMP







2.2. Adding or subtracting selections

2.2. Adding or subtracting selections



2. Creating and Using Selections

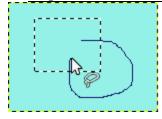


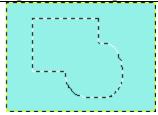
2.2. Adding or subtracting selections

Tools have options that you can configure. Each selection tool allows you to set the selection mode. The following selection modes are supported:

- Replace is the most used selection mode. In replace mode, a selection replaces any existing selection.
- Add mode, causes new selections to be added to any existing selection. Press and hold the **Shift** key while making a selection to temporarily enter add mode.
- Subtract mode, causes new selections to be removed from any existing selection. Press and hold the **Ctrl** key while making a selection to temporarily enter subtract mode.
- Intersect mode, causes areas in both the new and existing selection to become the new selection. Press and hold both the **Shift** and **Ctrl** key while making a selection to temporarily enter intersect mode.

Figure 7.8. Enlarging a rectangular selection with Free Select





The figure shows an existing rectangular selection. Select <u>Free Select</u>. While pressing the **Shift** key, make a free hand selection that includes the existing selection. Release the mouse button and areas are included in the selection.



Note

To correct selection defects precisely, use the Quick Mask.







2. Creating and Using Selections



3. The Quick Mask

3/28/25, 9:06 AM 3. The Quick Mask

3. The Quick Mask

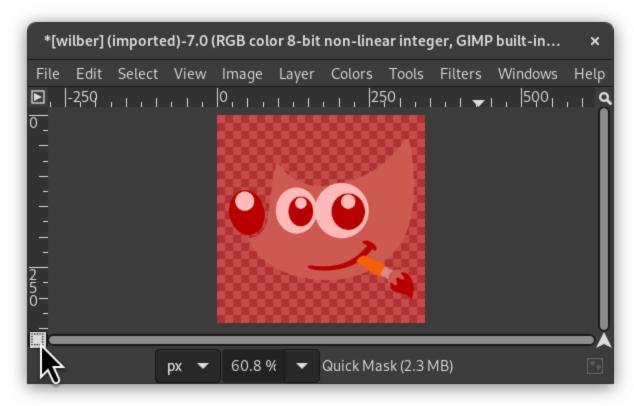


Chapter 7. Painting with GIMP



3. The Quick Mask

Figure 7.9. Image with Quick Mask enabled



The usual <u>selection tools</u> involve tracing an outline around an area of interest, which does not work well for some complex selections. The Quick Mask, however, allows you to paint a selection instead of just tracing its outline.

3.1. Overview

Normally, a selection in GIMP is represented by "marching ants" that trace the selection outline, but there may be more to a selection than the marching ants show. A GIMP selection is actually a full-fledged grayscale channel, covering the image, with pixel values ranging from 0 (unselected) to 255 (fully selected). The marching ants are drawn along a contour of half-selected pixels. Thus, what the marching ants show you as either inside or outside the boundary is really just a slice through a continuum.

The Quick Mask is GIMP's way of showing the full structure of the selection. Quick Mask also provides the ability to interact with the selection in more powerful ways. Click the bottom-left button in the image window to toggle Quick Mask on and off. The button switches between Quick Mask mode, and marching ants mode. You can also use Select → Toggle Quick Mask, or Shift + Q, to toggle between Quick Mask and marching ants mode. In Quick Mask mode, the selection is shown as a translucent screen overlying the image, whose transparency at each pixel indicates the degree to which that pixel is selected. By default the mask is shown in red, but you can change this if another mask color is more convenient. The less a pixel is selected, the more it is obscured by the mask. Fully selected pixels are shown completely clear.

In Quick Mask mode, many image manipulations act on the selection channel rather than the image itself. This includes, in particular, paint tools. Painting with white selects pixels, and painting with black unselects pixels. You can use any of the paint tools, as well as the bucket fill and gradient fill tools, in this way. Advanced users of GIMP learn that "painting the selection" is the easiest and most effective way to delicately manipulate the image.

3/28/25, 9:06 AM 3. The Quick Mask



Tip

To save a Quick Mask selection to a new channel; Make sure that there is a selection and that Quick Mask mode is not active in the image window. Use Select → Save to Channel. to create a new channel in the Channels dialog called "SelectionMask copy" (repeating this command creates "...copy#1", "...copy#2" and so on).



Tip

In Quick Mask mode, Cut and Paste act on the selection rather than the image. You can sometimes make use of this as the most convenient way of transferring a selection from one image to another.

You can learn more on Selection masks in the section dedicated to the Channels dialog.







2.2. Adding or subtracting selections



3.2. Properties

3/28/25, 9:06 AM 3.2. Properties

3.2. Properties



3. The Quick Mask



3.2. Properties

There are two Quick Mask properties you can change by right-clicking on the Quick Mask button.

- Normally the Quick Mask shows unselected areas "fogged over" and selected areas "in clear", but you can
 reverse this by choosing "Mask Selected Areas" instead of the default "Mask Unselected Areas".
- Use "Configure Color and Opacity..." to open a dialog that allows you to set these to values other than the defaults, which are red at 50% opacity.







3. The Quick Mask



3.3. Using Quick Mask Mode

3.3. Using Quick Mask Mode



3. The Quick Mask



3.3. Using Quick Mask Mode

- 1. Open an image or begin a new document.
- 2. Activate Quick Mask mode using the left-bottom button in the image window. If a selection is present the mask is initialized with the content of the selection.
- 3. Choose any drawing tool. Paint on the Quick Mask with black to remove selected areas, and paint with white to add selected areas. Use gray colors to partially select areas.
 - You can also use selection tools and fill these selections with the Bucket Fill tool; this does not destroy the Quick Mask selections!
- 4. Toggle Quick Mask mode off using the left-bottom button in the image window: the selection will be displayed with <u>marching ants</u>.







3.2. Properties



4. Paths

3/28/25, 9:07 AM 4. Paths

4. Paths



Chapter 7. Painting with GIMP

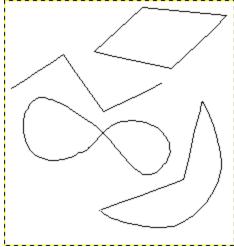


4. Paths

Paths are curves (known as Bézier-curves). To understand their concepts and mechanism, look at the glossary <u>Bézier-curve</u> or Wikipedia [<u>WKPD-BEZIER</u>]. The Paths tool allows you to design complex shapes. When designing a shape, you first use the <u>Paths</u> tool in GIMP to create a path. After that you usually stroke or fill the path. In GIMP, the term "Stroke path" means to apply a specific style to the path (color, width, pattern, etc). A path can be used in several ways:

- You can convert a closed path to a selection.
- Any path, open or closed, can be *stroked*; that is, painted on the image in a variety of ways.
- A path can be *filled* with a color or pattern. If the path is not closed, it will try to figure out the shape and then fill it. However, this will not work if the path is a straight line.

Figure 7.10. Illustration of four different paths



Four examples of GIMP paths: one closed and polygonal; one open and polygonal; one closed and curved; one with a mixture of straight and curved segments.

4.1. Path Creation

Start by drawing the outline for your path; the outline can be modified later (see the <u>Paths</u> tool). To start, select the Paths tool using one of the following methods:

- Use Tools → Paths from the menu.
- Use the relevant icon in toolbox.
- Use the B keyboard shortcut.

When the Paths tool is selected, the mouse cursor changes into a crosshair with a curve by default. The actual shape depends on your <u>mouse pointer mode setting</u>. Make sure that the Paths Edit Mode in <u>Tool Options</u> is set to Design.

Left click in the image to create the first point of the path. Move the mouse to a new point and left click to create another point linked to the previous point. Although you can create as many points as you desire, you only need two points to learn about Paths.

While adding points, the mouse cursor has a little "+" next to the curve, which indicates that clicking will add a new point.

When the mouse cursor is close to one of the path points, the "+" changes into a cross with arrows; like the move tool. You can then move the existing path point.

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To close your path, go with the mouse on top of the point you want to connect to, and then Ctrl-click that point. When you are done designing your path, you can press Enter. This will turn the path into a Selection. You can also keep adding more points, or start changing the curves of the path.

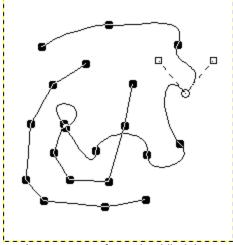
To edit the curves of your path, move the mouse cursor close to a line segment, left-click and drag the line segment. Two events occur.

- The line segment bends and curves as it is pulled.
- Each line segment has two start points and end points marked by little square rectangles, these are called handles. A "direction line" now projects from each start point for the line segment that was moved. This direction line usually has a different color than the lines of the path.

The curved line segment leaves an end point in the same direction that the "direction line" leaves the start point. The length of this line controls how far the line segment projects along the "direction line" before curving towards the other path point.

The handle at the end of each "direction line" can be dragged to change the direction and length of the curve. The handles on the other end, where they connect to the path, can be used to move the position of that path point.

Figure 7.11. Appearance of a path while it is manipulated



Appearance of a path while it is manipulated using the Paths tool.

The path is comprised of two components with both straight and curved segments. Black squares are anchor points, the open circle indicates the selected anchor, and the two open squares are the handles associated with the selected anchor.









3.3. Using Quick Mask Mode

4.2. Path Properties

4.2. Path Properties



4. Paths



4.2. Path Properties

Paths, like layers and channels, are components of an image. When an image is saved in GIMP's native XCF file format, any paths it has are saved with it. The list of paths in an image can be viewed and operated on using the Paths. You can move a path from one image to another by copying and pasting using the pop-up menu in the Paths dialog, or by dragging an icon from the Paths dialog into the destination image window.

GIMP paths belong to a mathematical type called "Bezier paths". What this means in practical terms is that they are defined by *anchors* and *handles*. "Anchors" are points the path goes through. "Handles" define the direction of a path when it enters or leaves an anchor point: each anchor point has two handles attached to it.

Paths can be very complex. If you create them by hand using the <u>Paths</u> tool, they probably won't contain more than a few dozen anchor points and usually a lot less than that. However, if you create them by transforming a selection into a path, or by transforming text into a path, the result can easily contain hundreds or even thousands of anchor points. A path may contain multiple *components*. A "component" is a part of a path whose anchor points are all connected to each other by path segments. The ability to have multiple components in paths allows you to convert them into selections having multiple disconnected parts.

Each component of a path can be either *open* or *closed*: "closed" means that the last anchor point is connected to the first anchor point. If you transform a path into a selection, any open components are automatically converted into closed components by connecting the last anchor point to the first anchor point with a straight line.

Path segments can be either straight or curved. A path is called "polygonal" if all of its segments are straight. A new path segment is always created straight; the handles for the anchor points are directly on top of the anchor points, yielding handles of zero length, which produces straight-line segments. Drag a handle away from an anchor point to cause a segment to curve.

One nice thing about paths is that they use very few resources, especially in comparison with images. Representing a path in RAM requires storing only the coordinates of its anchors and handles. Therefore, it is possible to have literally hundreds of paths in an image without causing any significant stress to your system. Even a path with thousands of segments consumes minimal resources in comparison to a typical layer or channel.

Paths can be created and manipulated using the Paths tool.



4. Paths







4.3. Paths and Selections

4.3. Paths and Selections



4. Paths



4.3. Paths and Selections

GIMP lets you transform the selection of an image into a path. It also lets you transform paths into selections. For information about the selection and how it works, see the Selection section.

When you transform a selection into a path, the path closely follows the <u>"marching ants"</u>. Now, the selection is a two-dimensional entity, but a path is a one-dimensional entity, so there is no way to transform the selection into a path without losing information. In fact, any information about partially selected areas (i.e., feathering) are lost when a selection is turned into a path. If the path is transformed back into a selection, the result is an all-or-none selection, similar to what is obtained by executing <u>Sharpen</u> from the Select menu.







4.2. Path Properties



4.4. Transforming Paths

4.4. Transforming Paths



4. Paths



4.4. Transforming Paths

Each of the <u>Transform tools</u> (Rotate, Scale, Perspective, etc) can be set to act on a layer, selection, or path. Select the transform tool in the toolbox, then select <u>Fig. 18</u> selection, or <u>Fig. 18</u> path for the Transform option in the tool's Tool Options dialog. This gives you a powerful set of methods for altering the shapes of paths without affecting other elements of the image.

By default a Transform tool, when it is set to affect paths, acts only on the *active path* which is shown highlighted in the Paths Dialog. You can make a transformation affect more than one path by selecting additional paths. Selecting multiple paths is done by using the mouse and Shift key, for adding a range of paths, or Ctrl key, for adding or removing the clicked path.









4.5. Stroking a Path

3/28/25, 9:08 AM 4.5. Stroking a Path

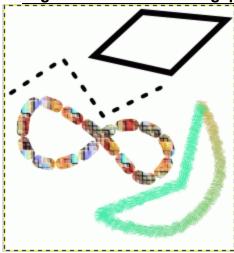
4.5. Stroking a Path





4.5. Stroking a Path

Figure 7.12. Stroking paths



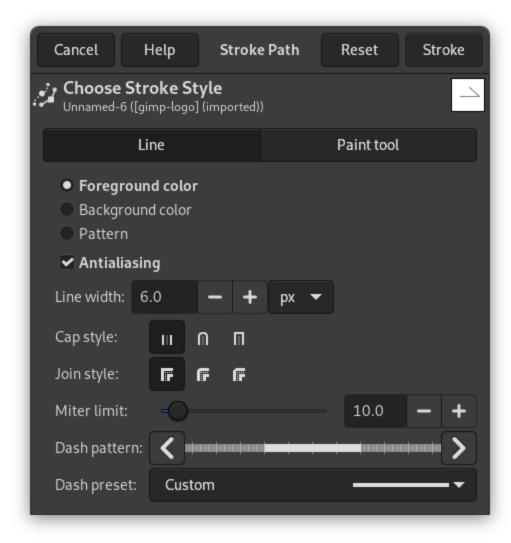
The four paths from the top illustration, each stroked in a different way.

Paths do not alter the appearance of the image pixel data unless they are stroked, using Edit \rightarrow Stroke Paths... from the main menu or the Paths Dialog right-click menu, or the "Stroke Path" button in the Tool Options dialog for the Paths tool.

Choosing "Stroke Path" by any of these means brings up a dialog that allows you to control the way the stroking is done. You can choose from a wide variety of line styles, or you can stroke with any of the Paint tools, including unusual ones such as the Clone tool, Smudge tool, Eraser, etc.

Figure 7.13. The Stroke Path dialog

3/28/25, 9:08 AM 4.5. Stroking a Path



See Section 3.19, "Stroke Paths" for more information.

You can further increase the range of stroking effects by stroking a path multiple times, or by using lines or brushes of different widths. The possibilities for getting interesting effects in this way are almost unlimited.



3/28/25, 9:08 AM 4.6. Paths and Text

4.6. Paths and Text



4. Paths



4.6. Paths and Text

Figure 7.14. Text converted to a path



Text converted to a path and then transformed using the Perspective tool.



The path shown above, stroked with a fuzzy brush and then gradient-mapped using the Gradient Map filter with the "Yellow Contrast" gradient.

A text item created using the <u>Text</u> tool can be transformed into a path using the <u>Text to Path</u> command in the context menu of the Text tool. This can be useful for several purposes, including:

- Stroking the path, which gives you many possibilities for fancy text.
- More importantly, transforming the text. Converting text into a path, then transforming the path, and finally either stroking the path or converting it to a selection and filling it, often leads to much higher-quality results than rendering the text as a layer and transforming the pixel data.

You can also wrap text along an existing path using the <u>Text along Path</u> command.



4.5. Stroking a Path







4.7. Paths and SVG files

4.7. Paths and SVG files



4. Paths



4.7. Paths and SVG files

SVG, standing for "Scalable Vector Graphics", is a popular file format for vector graphics, in which graphical elements are represented in a resolution-independent format, in contrast to raster graphics; in which graphical elements are represented as arrays of pixels. GIMP is mainly a raster graphics program, but paths are vector entities. Fortunately, paths are represented in SVG files in almost exactly the same way they are represented in GIMP. This compatibility makes it possible to store GIMP paths as SVG files without losing any information. You can access this capability in the Paths Dialog.

It also means that GIMP can create paths from SVG files saved in other programs, such as Inkscape, a popular opensource vector graphics application. This is nice because dedicated vector editing programs have much more powerful path-manipulation tools than GIMP does. You can import a path from an SVG file using the Paths dialog. The SVG format handles many other graphical elements than just paths: among other things, it handles figures such as squares, rectangles, circles, ellipses, regular polygons, etc. GIMP cannot do anything with these entities, but it can load them as paths.



Note

Creating paths is not the only thing GIMP can do with SVG files. It can also open SVG files as GIMP images, in the usual way.









5. Brushes

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5. Brushes



Chapter 7. Painting with GIMP



5. Brushes

Figure 7.15. Brush strokes example



A number of examples of brushstrokes painted using different brushes from the set supplied with GIMP. All were painted using the Paintbrush tool.

A *brush* is a pixmap or set of pixmaps used for painting. GIMP includes a set of <u>Paint Tools</u>, which not only perform operations that you would normally think of as painting, but also operations such as erasing, copying, smudging, lightening or darkening, etc. All of the paint tools, except the ink tool, use the same set of brushes. The brush pixmaps represent the marks that are made by single "touches" of the brush to the image. A brush stroke, usually made by moving the pointer across the image with the mouse button held down, produces a series of marks spaced along the trajectory, in a way specified by the characteristics of the brush and the paint tool being used. Brushes can be selected by clicking on an icon in the <u>Brushes dialog</u>. GIMP's *current brush* is shown in the Brush/Pattern/Gradient area of the Toolbox. Clicking on the brush symbol there is one way of activating the Brushes dialog.

When you install GIMP, it comes with a number of basic brushes, plus a few bizarre ones that serve mainly to give you examples of what is possible (i. e., the "green pepper" brush in the illustration). You can also create new brushes, or download them and install them so that GIMP will recognize them.

GIMP can use several different types of brushes. All of them, however, are used in the same way, and for most purposes you don't need to worry about the differences when you paint with them. Here are the available types of brushes:

Ordinary brushes

Most of the brushes supplied with GIMP fall into this category. They are represented in the Brushes dialog by grayscale pixmaps. When you paint using them, the current foreground color (as shown in the Color Area of the Toolbox) is substituted for black, and the pixmap shown in the Brushes dialog represents the mark that the brush makes on the image.

To create such a brush: create a grayscale image in gray levels, where black is fully visible, white is transparent, with gray levels in between. Do not use transparency for these brushes. Save it with the .gbr extension. Click on the Refresh button in the Brushes Dialog to get it in preview without it being necessary to restart GIMP.

Color brushes

Brushes in this category are represented by colored images in the Brushes dialog. They can be pictures or text. When you paint with them, the colors are used as shown; the current foreground color does not come into play. Otherwise they work the same way as ordinary brushes.

To create such a brush, create a small RGBA image:

Select File \rightarrow New... from the main menu.

In the Advanced Options, set for example the Color space to RGB color and set Fill with to Transparency.

Draw your image. Contrary to grayscale brushes, transparent areas here will be drawn transparent.

Select File → Save... from the main menu to first save your image as an .xcf file to keep its properties.

Select File → Export As... from the main menu to export the image as a brush with the .gbr extension.

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In the <u>Brushes Dialog</u>, click on the button Refresh brushes **C** .

Your brush appears among the other brushes. You can use it immediately, without restarting GIMP.



Tip

When you do a Copy or a Cut on a selection, you see the contents of the clipboard (that is the selection) at the first position in the brushes dialog. And you can use it for painting.

Figure 7.16. Selection to Brush after Copy or Cut

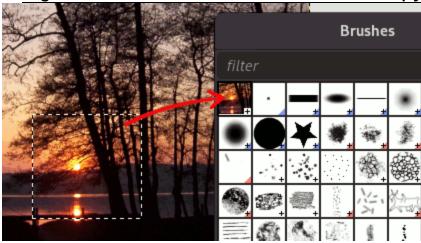


Image hoses / Image pipes

Brushes in this category can make more than one kind of mark on an image. They are indicated by small red triangles at the lower right corner of the brush symbol in the Brushes dialog. They are sometimes called "animated brushes" because the marks change as you trace out a brushstroke. In principle, image hose brushes can be very sophisticated, especially if you use a tablet, changing shape as a function of pressure, angle, etc. These possibilities have never really been exploited, however; and the ones supplied with GIMP are relatively simple (but still quite useful).

You will find an example on how to create such brushes in Animated brushes

Parametric brushes

These are brushes created using the <u>Brush Editor</u>, which allows you to generate a wide variety of brush shapes by using a simple graphical interface. A nice feature of parametric brushes is that they are *resizable*. It is possible, using the Preferences dialog, to make key presses or mouse wheel rotations cause the current brush to become larger or smaller, if it is a parametric brush.

Now, all brushes have a variable size. In fact, in the option box of all painting tools there is a slider to enlarge or reduce the size of the active brush. You can do this directly in the image window if you have set correctly your mouse wheel; see <u>Varying brush size</u>.

In addition to the brush pixmap, each GIMP brush has one other important property: the brush *Spacing*. This represents the distance between consecutive brush-marks when a continuous brushstroke is painted. Each brush has an assigned default value for this, which can be modified using the Brushes dialog.



Note

GIMP can use MyPaint brushes. Please refer to <u>Section 3.11, "MyPaint Brush"</u> for more information.

5.1. Adding New Brushes



Note

There is a quick method to add a new brush: <u>Section 5.4, "Creating a brush quickly"</u>.

To add a new brush, after either creating or downloading it, you need to save it in a format GIMP can use. The brush file needs to be placed in the GIMP's brush search path, so that GIMP is able to index and display it in the Brushes dialog. You can hit the Refresh button, which reindexes the brush directory. GIMP uses three file formats for brushes:

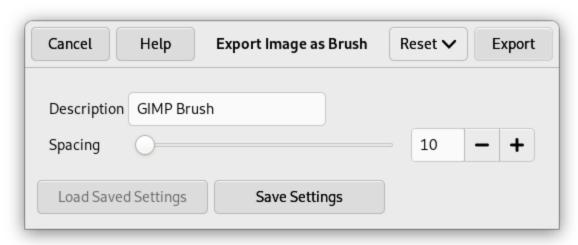
GBR

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The .gbr ("gimp brush") format is used for ordinary and color brushes. You can convert many other types of images, including many brushes used by other programs, into GIMP brushes by opening them in GIMP and saving them with file names ending in .gbr. This brings up a dialog box in which you can set the default Spacing for the brush.

A technical specification of the GBR file format can be found on developer.gimp.org.

Figure 7.17. Save a .gbr brush



GIH

The .gih ("gimp image hose") format is used for animated brushes. These brushes are constructed from images containing multiple layers: each layer may contain multiple brush-shapes, arranged in a grid. When you save an image as a .gih file, a dialog comes up that allows you to describe the format of the brush. See Section 5.2, "Creating animated brushes" for more information about the dialog.

A technical specification of the GIH file format can be found on developer.gimp.org.

VBR

The .vbr format is used for parametric brushes, i. e., brushes created using the Brush Editor. There is really no other meaningful way of obtaining files in this format.

MYB

The .myb format is used for MyPaint brushes. Please refer to <u>Section 3.11, "MyPaint Brush"</u> for more information.

To make a brush available, place it in one of the folders in GIMP's brush search path. By default, the brush search path includes two folders, the system brushes folder, which you should not use or alter, and the brushes folder inside your personal GIMP directory. You can add new folders to the brush search path using the Brush Folders page of the Preferences dialog. Any GBR, GIH, or VBR file included in a folder in the brush search path will show up in the Brushes dialog the next time you start GIMP, or as soon as you press the Refresh button in the Brushes dialog.



Note

When you create a new parametric brush using the Brush Editor, it is automatically saved in your personal brushes folder.

There are a number of web sites with downloadable collections of GIMP brushes. Rather than supplying a list of links that will soon be out of date, the best advice is to do a search with your favorite search engine for "GIMP brushes". There are also many collections of brushes for other programs with painting functionality. Some can be converted easily into GIMP brushes, some require special conversion utilities, and some cannot be converted at all. Most fancy procedural brush types fall into the last category. If you need to know, look around on the web, and if you don't find anything, look for an expert to ask.







4.7. Paths and SVG files



5.2. Creating animated brushes

5.2. Creating animated brushes



5. Brushes

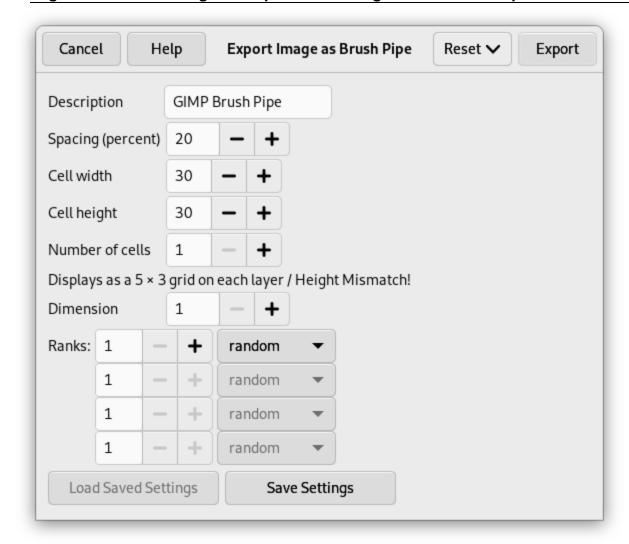


5.2. Creating animated brushes

Just like for normal brushes, these animated brushes can also be either grayscale or color. For grayscale images, where the actual brush will use the current foreground color, you use white for transparency. For color images, transparent parts are used as such and when making brush strokes, the actual colors will be used instead of the foreground color.

To create a new animated brush, create either a grayscale or color image, based on whether you want the brush to use the user's foreground color, or the actual colors in the image. Then create the images for your animation steps. To save the brush into gih format, select File \rightarrow Export As..., name your work with the gih extension, and press the Export button. The following window is displayed:

Figure 7.18. Dialog to export an image as Brush Pipe



Dialog to export an image as GIMP image hose

This dialog box has several options that allow you to select how your brush is animated.

Spacing (Percent)

"Spacing" is the distance between consecutive brush marks when you trace out a brushstroke with the pointer. You must consider drawing with a brush, whatever the paint tool, like stamping. If Spacing is low, stamps will be very

close and stroke look continuous. If spacing is high, stamps will be separated: that's interesting with a color brush (like "green pepper" for instance). Value varies from 1 to 200 and this percentage refers to brush "diameter": 100% is one diameter.

Description

It's the brush name that will appear at the top of Brush Dialog (grid mode) when the brush is selected.

Cell Size

That is size of cells you will cut up in layers. Default is one cell per layer and size is that of the layer. Then there is only one brush aspect per layer.

We could have only one big layer and cut up in it the cells that will be used for the different aspects of the animated brush.

For instance, we want a 100×100 pixels brush with 8 different aspects. We can take these 8 aspects from a 400×200 pixels layer, or from a 300×300 pixels layer but with one cell unused.

Number of cells

That's the number of cells (one cell per aspect) that will be cut in every layer. Default is the number of layers as there is only one layer per aspect.

Display as

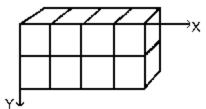
This tells how cells have been arranged in layers. If, for example, you have placed height cells at the rate of two cells per layer on four layers, GIMP will display: 1 rows of 2 columns on each layer.

Dimension, Ranks, Selection dropdown

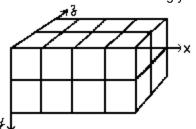
There things are getting complicated! Explanations are necessary to understand how to arrange cell and layers. GIMP starts retrieving cells from each layer and stacks them into a FIFO stack (First In First Out: the first in is at the top of the stack and so can be first out). In our example 4 layers with 2 cells in each, we'll have, from top to bottom: first cell of first layer, second cell of first layer, first cell of second layer, second cell of second layer, ..., second cell of fourth layer. With one cell per layer or with several cells per layer, result is the same. You can see this stack in the Layers Dialog of the resulting .gih image file.

Then GIMP creates a computer array from this stack with the Dimensions you have set. You can use four dimensions.

In computer science an array has a "myarray(x,y,z)" form for a 3 dimensions array (3D). It's easy to imagine a 2D array: on a paper it's an array with rows and columns



With a 3d array we don't talk rows and columns but Dimensions and Ranks. The first dimension is along x axis, the second dimension along y axis, the third along z axis. Each dimension has ranks of cells.



To fill up this array, GIMP starts retrieving cells from the top of stack. The way it fills the array reminds that of an odometer: right rank digits turn first and, when they reach their maximum, left rank digits start running. If you have some memories of Basic programming you will have, with an array(4,2,2), the following succession: (1,1,1),(1,1,2), (1,2,1),(1,2,2),(2,1,1),(2,1,2),(2,2,2),(3,1,1),..., (4,2,2). We will see this later in an example.

Besides the rank number that you can give to each dimension, you can also give them a Selection mode. You have several modes that will be applied when drawing:

Incremental

GIMP selects a rank from the concerned dimension according to the order ranks have in that dimension.

Angular

GIMP selects a rank in the concerned dimension according to the moving angle of the brush.

The first rank is for the direction 0°, upwards. The other ranks are affected, clockwise, to an angle whose value is 360/number of ranks. So, with 4 ranks in the concerned dimension, the angle will move 90° clockwise for

each direction change: second rank will be affected to 90° (rightwards), third rank to 180° (downwards) and fourth rank to 270° (-90°) (leftwards).

Random

GIMP selects a rank at random from the concerned dimension.

Velocity, Pressure, Xtilt, Ytilt

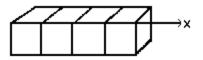
These options are for sophisticated drawing tablets.

Examples

A one dimension image pipe

Well! What is all this useful for? We'll see that gradually with examples. You can actually place in each dimension cases that will give your brush a particular action.

Let us start with a 1D brush which will allow us to study selection modes action. We can imagine it like this:



Follow these steps:

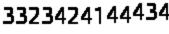
- 1. Select File \rightarrow New... from the main menu.
 - Set Width and Height for example to 30 pixels.
 - In the Advanced Options, set the Color space to RGB color and set Fill with to Transparency. Using the Text tool create 4 layers "1", "2", "3", "4". Delete the "background" layer.
- 2. Select File → Save... from the main menu to first save your image as an .xcf file to keep its properties. Select File → Export As... from the main menu to export the image as an animated brush with the .gih extension.
 - Export the image with a .gbr extension in the brushes directory located inside <u>your personal GIMP</u> <u>configuration folder</u>.
- 3. In the Export Image as Brush Pipe dialog, provide a Description, set the Spacing (percent) to 100, set the Cell size to 30×30, set Dimension to 1, and set Ranks to 4, and the Selection drop-down to incremental. Then click the Export button.
- 4. In the <u>Brush Dialog</u>, click on the button Refresh brushes **C**. Your brush appears among the other brushes. You can use it immediately, without restarting GIMP. Select your brush. Select pencil tool for instance and click and hold with it on a new image:

12341234123412



You see 1, 2, 3, 4 digits following one another in order.

5. Take your .xcf image file back and export it as .gih setting the Selection drop-down to random:





Digits will be displayed at random order.

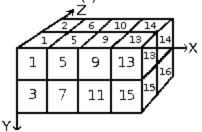
6. Now set the Selection drop-down to angular:



A 3 dimensions image hose

We are now going to create a 3D animated brush: its orientation will vary according to brush direction, it will alternate Left/Right hands regularly and its color will vary at random between black and blue.

The first question we have to answer to is the number of images that is necessary. We reserve the first dimension (x) to the brush direction (4 directions). The second dimension (y) is for Left/Right alternation and the third dimension (z) for color variation. Such a brush is represented in a 3D array "myarray(4,2,2)":



There are 4 ranks in first dimension (x), 2 ranks in second dimension (y) and 2 ranks in third dimension (z). Thus there are $4 \times 2 \times 2 = 16$ cells. We need 16 images.

Creating images of dimension 1 (x)

Open a new 30×30 pixels image, RGB with Transparent Fill Type. Using the zoom draw a left hand with fingers upwards. [2] Save it as handL0k.xcf (hand Left 0° Black).

Open the <u>Layers Dialog</u>. Double click on the layer to open the Layer Attributes Dialog and rename it to handL0k.

Duplicate the layer. Let visible only the duplicated layer, select it and apply Layer \rightarrow Transform \rightarrow Rotate 90° clockwise. Rename it to handL90k.

Repeat the same operations to create handL180k and handL-90k (or handL270k).

2. Creating images of dimension 2 (y)

This dimension in our example has two ranks, one for left hand and the other for right hand. The left hand rank exists yet. We shall build right hand images by flipping it horizontally.

Duplicate the handL0k layer. Let it visible only and select it. Rename it to handR0K. Apply Layer \rightarrow Transform \rightarrow Flip Horizontally.

Repeat the same operation on the other left hand layers to create their right hand equivalent. Re-order layers to have a clockwise rotation from top to bottom, alternating Left and Right: handL0k, handR0k, handL90k, handR90k, ..., handR-90k.

3. Creating images of dimension 3 (z)

Creating images of dimension 3 (z): The third dimension has two ranks, one for black color and the other for blue color. The first rank, black, exists yet. We well see that images of dimension 3 will be a copy, in blue, of the images of dimension 2. So we will have our 16 images. But a row of 16 layers is not easy to manage: we will use layers with two images.

Select the handL0k layer and let it visible only. Use Image \rightarrow Canvas Size... to <u>change the canvas size</u> to 60×30 pixels.

Duplicate handL0k layer. On the copy, fill the hand with blue using Bucket Fill tool.

Now, select the Move tool. Double click on it to accede to its properties: check Move the Current Layer option. Move the blue hand into the right part of the layer precisely with the help of Zoom.

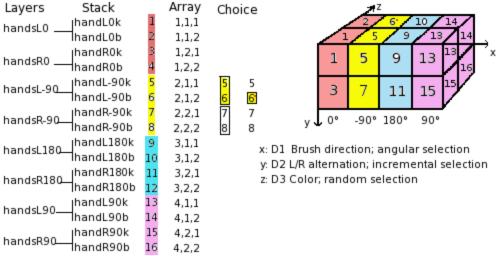
Make sure only handL0k and its blue copy are visible. Right click on the Layers dialog: Apply the Merge Visible Layers command with the option Expand as Necessary. You get a 60×30 pixels layer with the black hand on the left and the blue hand on the right. Rename it to "handsL0".

Repeat the same operations on the other layers.

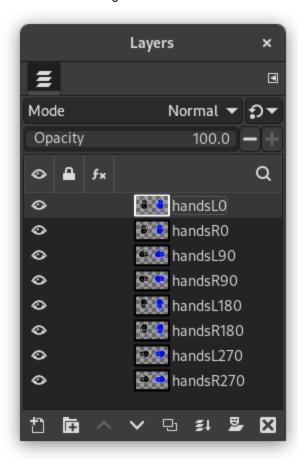
4. Set layers in order

Layers must be set in order so that GIMP can find the required image at some point of using the brush. Our layers are yet in order but we must understand more generally how to have them in order. There are two ways to imagine this setting in order. The first method is mathematical: GIMP divides the 16 layers first by 4; that gives 4 groups of 4 layers for the first dimension. Each group represents a direction of the brush. Then, it divides each group by 2; that gives 8 groups of 2 layers for the second dimension: each group represents a L/R alternation. Then another division by 2 for the third dimension to represent a color at random between black and blue.

The other method is visual, by using the array representation. Correlation between two methods is represented in next image:



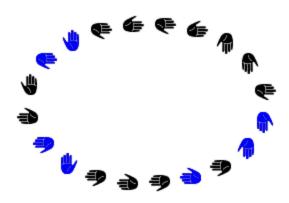
How will GIMP read this array?: GIMP starts with the first dimension which is programmed for "angular", for instance 90°. In this 90° rank, in yellow, in the second dimension, it selects a L/R alternation, in an "incremental" way. Then, in the third dimension, in a random way, it chooses a color. Finally, our layers must be in the following order:



- 5. Voilà. Your brush is ready. Save it as .xcf first, then export as .gih with the following parameters:
 - Spacing: 100
 - Description: Hands
 - Cell Size: 30×30
 - Number of cells: 16
 - Dimensions: 3
 - Dimension 1: 4 ranks Selection: Angular
 - Dimension 2: 2 ranks Selection: Incremental
 - Dimension 3: 2 ranks Selection: Random

Place your .gih file into the GIMP brush directory and refresh the brush box (see steps above). You can now use your brush.

Figure 7.19. Here is the result by stroking an elliptical selection with the brush:



This brush alternates right hand and left hand regularly, black and blue color at random, direction according to four brush directions.

[2] Ok, we are cheating here: our hand is borrowed from https://commons.wikimedia.org/wiki/File:Stop_hand.png.



5. Brushes





5.3. Changing brush size

5.3. Changing brush size



5. Brushes



5.3. Changing brush size

All brushes have a variable size that can be changed.

You can change the brush size in several ways:

- Using the Size slider in the <u>tool options</u>. Pencil, Paintbrush, Eraser, Airbrush, Clone, Heal, Perspective Clone, Blur/Sharpen and Dodge/Burn tools have a slider to vary the brush size.
- By using the default shortcut keys for changing a tool's size:
 - Decrease size by 1:
 Increase size by 1:
 Decrease size by 10:
 Increase size by 10:
- By using the default mouse scrollwheel actions for changing a tool's size:
 - Decrease size by 1: Ctrl + Alt + Scrollwheel Down
 - Increase size by 1: Ctrl + Alt + Scrollwheel Up
- By configuring the mouse wheel behavior in the Input Controllers preferences:
 - 1. In the main window of GIMP, click on Edit \rightarrow Preferences.
 - 2. In the left column of the new window, select Input Devices → Input Controllers.
 - 3. The Additional Input Controllers preferences are displayed with two columns: Available Controllers and Active Controllers.
 - In the column Active Controllers, double-click the Main Mouse Wheel button.
 - 4. The Configure Input Controller dialog opens. In the left column Event, select the entry Scroll Up.
 - 5. Click the Edit event button (at the bottom middle of the list).
 - 6. The Select Controller Event Action dialog opens. In the Action column, expand the tools item.
 - 7. In the left column Action, select Tool's Size: Increase Relative, then click the OK button.
 - 8. Now the Scroll Up event is associated with the action tools-size-increase-percent.
 - 9. Close the window.
 - 10. With the same method, configure Scroll Down to be associated with Tool's Size: Decrease Relative.
 - 11. Click the OK button of the main window of Preferences.

After these somewhat long explanations, you can use your mouse wheel to vary brush size. For example, choose the pencil tool with the Circle brush. Set the pointer in the image window, and use the mouse wheel in both directions to see the Circle shrinking or stretching.

By configuring the behavior of the Up and Down arrow keys of the keyboard:

The method is similar to that of the mouse wheel. The only differences are:

- In the column Active Controllers, double-click Main Keyboard.
- In the column <u>Even</u>t, ed<u>it the ent</u>ry Cursor Up for the first key, and Cursor Down for the second key.
- Then, use the **Up** and **Down** arrow keys of the keyboard. The result is the same as with the mouse wheel.







5.2. Creating animated brushes



5.4. Creating a brush quickly

5.4. Creating a brush quickly





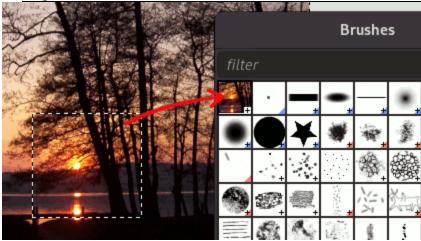
5.4. Creating a brush quickly

There are two methods to create a new brush:

1. First, the quick temporary method. You have an image area from which you want to make a brush, to be used with a tool like pencil, airbrush, etc. Select it with the rectangular (or elliptical) select tool, then Copy this selection. Immediately you can see this copy in the first position of the Brush Dialog, and its name is "Clipboard". It is immediately usable.

This brush is temporary: it disappears when you close GIMP. You can make it permanent by clicking on the Duplicate this brush at the bottom of the brush panel.





2. The second method is more elaborate.

Select File \rightarrow New... from the main menu.

Set Width and Height for example to 30 pixels.

In the Advanced Options, set for example the Color space to Grayscale and set Fill with to White.

Zoom on this new image to enlarge it and draw on it with a black pencil.

Select File → Export As... from the main menu.

Export the image with a .gbr extension in the brushes directory located inside <u>your personal GIMP configuration</u> folder.

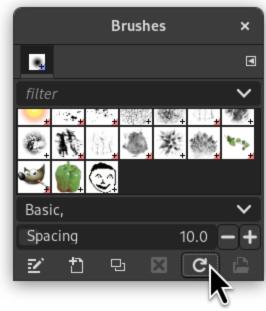
In the Brush Dialog, click on the button Refresh brushes C.

Your brush appears among the other brushes. You can use it immediately, without restarting GIMP.

Figure 7.21. Steps to create a brush



Draw image, save as brush



Refresh brushes



Report a bug in GIMP Report a documentation error

Use the brush



5.3. Changing brush size







6. Gradients

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6. Gradients

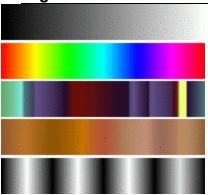


Chapter 7. Painting with GIMP



6. Gradients

Figure 7.22. Some examples of GIMP gradients.



Gradients from top to bottom: FG to BG (RGB); Full Saturation Spectrum CCW; Nauseating Headache; Browns; Four Bars

A *gradient* is a set of colors arranged in a linear order. The most basic use of gradients is by the <u>Gradient tool</u>, sometimes known as "gradient fill tool": it works by filling the selection with colors from a gradient. You have many options to choose from for controlling the way the gradient colors are arranged within the selection. There are also other important ways to use gradients, including:

Painting with a gradient

Each of GIMP's basic painting tools allows you the option of using colors from a gradient. This enables you to create brushstrokes that change color from one end to the other.

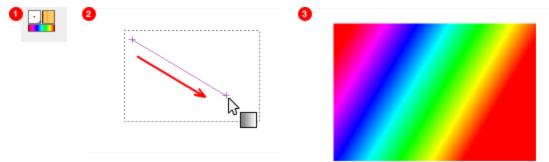
The Gradient Map filter

This filter is in the Colors menu, and allows you to "colorize" an image, using the color intensity of each point with the corresponding color from the active gradient (the intensity 0, very dark, is replaced by the color at most left end of the gradient, progressively until the intensity is 255, very light, replaced by the most right color of the gradient. See Section 8.39, "Gradient Map" for more information.

GIMP comes presupplied with a large number of gradients. You can also add new gradients that you create or download from other sources. You can access the full set of available gradients using the <u>Gradients dialog</u>, a dockable dialog that you can either activate when you need it, or keep around as a tab in a dock. The "current gradient", used in most gradient-related operations, is shown in the Brush/Pattern/Gradient area of the Toolbox. Clicking on the gradient symbol in the Toolbox is an alternative way of bringing up the Gradients dialog. Some quick examples of working with gradients (for more information see <u>Gradient Tool</u>) are:

- Put a gradient in a selection:
 - 1. Choose a gradient.
 - 2. With the Blend Tool click and drag with the mouse between two points of a selection.
 - 3. Colors will distributed perpendicularly to the direction of the drag of the mouse and according to the length of it.

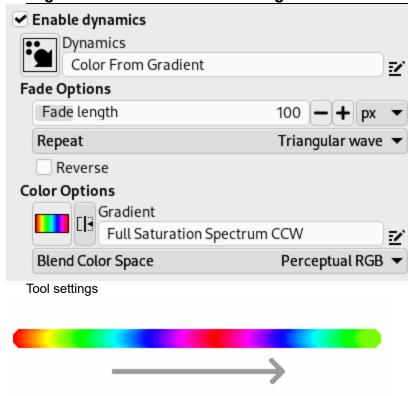
Figure 7.23. How to use rapidly a gradient in a selection



• Painting with a gradient:

You can also use a gradient with one of the drawing tools (e.g. Pencil, Paintbrush or Airbrush) if you switch on Enable dynamics and set Dynamics to Color From Gradient. In the next step, set the gradients length and the Repeat style in the Fade Options section, and select a suitable gradient in the Color Options section. Section 3.2.6, "Dynamics Options" describes these parameters in more detail. The following example shows the impact on the Pencil tool.

Figure 7.24. How to use a gradient with a drawing tool

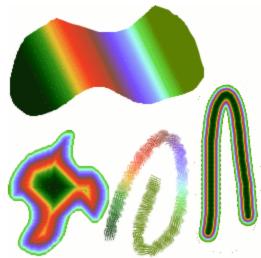


Resulting succession of the gradients colors

Different productions with the same gradient:

Figure 7.25. Gradient usage

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Four ways of using the Tropical Colors gradient: a linear gradient fill, a shaped gradient fill, a stroke painted using colors from a gradient, and a stroke painted with a fuzzy brush then colored using the <u>Gradient Map</u> filter

A few useful things to know about GIMP's gradients:

- The first gradients in the list are special: They use the colors from the <u>Foreground/Background Colors Area</u> in the Toolbox, instead of being fixed.
 - FG to BG (HSV Counter-Clockwise) represents the hue succession in a color wheel from the selected hue to 360°.
 - FG to BG (HSV Clockwise) represents the hue succession in a color wheel from the selected hue to 0°.
 - FG to BG (RGB) is the RGB representation of the gradient from the Foreground color to the Background color in Toolbox.
 - The FG to BG (Hard Edge) gradient generates a gradient from the foreground color to the background color, with hard-edged transitions in between.
 - With FG to Transparent, the selected hue becomes more and more transparent. You can modify
 these colors by using the Color Selector. Thus, by altering the foreground and background colors, you
 can make these gradients transition smoothly between any two colors you want.
 - The FG to Transparent (Hard Edge) gradient generates a gradient from the foreground color to transparency, with hard-edged transitions in between.
 Using this gradient, you can generate patterns very quickly with the "Repeat" option, alternating repetitive colored shapes with full transparency over a given background. Does works best with shapes like spiral, radial, square and linear.
- Gradients can involve not just color changes, but also changes in opacity. Some of the gradients are completely opaque; others include transparent or translucent parts. When you fill or paint with a non-opaque gradient, the existing contents of the layer will show through behind it.
- You can create new *custom* gradients, using the <u>Gradient Editor</u>. You cannot modify the gradients that are supplied with GIMP, but you can duplicate them or create new ones, and then edit those.

The gradients that are supplied with GIMP are stored in a system ${\tt gradients}$ folder.

Gradients that you create are automatically saved in the <code>gradients</code> folder of your personal GIMP directory. Any gradient files (ending with the extension <code>.ggr</code>) found in one of these folders, will automatically be loaded when you start GIMP. You can add more directories to the gradient search path, if you want to, in the Gradients tab of the <code>Data Folders</code> section of the Preferences dialog.

GIMP can also load gradient files in SVG format, used by many vector graphics programs. To make GIMP load an SVG gradient file, place it in the gradients folder of your personal GIMP directory, or any other folder in your gradient search path.



Tip

You can find a large number of interesting SVG gradients on the web, in particular at OpenClipArt Gradients [OPENCLIPART-GRADIENT].







4

3/28/25, 9:10 AM 7. Patterns

7. Patterns



Chapter 7. Painting with GIMP



7. Patterns

A *pattern* is an image, usually small, used for filling regions by *tiling*, that is, by placing copies of the pattern side by side like ceramic tiles. A pattern is said to be *tileable* if copies of it can be adjoined left-edge-to-right-edge and top-edge-to-bottom-edge without creating obvious seams. Not all useful patterns are tileable, but tileable patterns are nicest for many purposes. (A *texture*, by the way, is the same thing as a pattern.)

Figure 7.26. Pattern usage



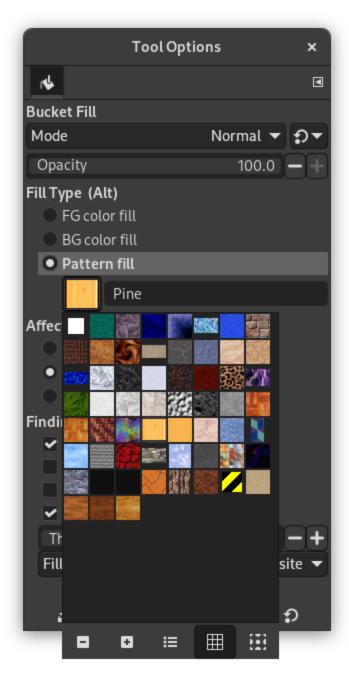
Three ways of using the "Leopard" pattern: bucket-filling a selection, painting with the Clone tool, and stroking an elliptical selection with the pattern.

In GIMP there are three main uses for patterns:

With the Bucket Fill tool, you can choose to fill a region with a pattern instead of a solid color.

Figure 7.27. The checked box for use a pattern

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The box for pattern fill is checked and a click on the pattern shows you all patterns in grid mode.

- With the <u>Clone</u> tool, you can paint using a pattern, with a wide variety of paintbrush shapes.
- When you *stroke* a path or selection, you can do it with a pattern instead of a solid color. You can also use the Clone tool as your choice if you stroke the selection using a painting tool.



Tip

Note: Patterns do not need to be opaque. If you fill or paint using a pattern with translucent or transparent areas, then the previous contents of the area will show through from behind it. This is one of many ways of doing "overlays" in GIMP.

When you install GIMP, it comes presupplied with a few dozen patterns, which seem to have been chosen more or less randomly. You can also add new patterns, either ones you create yourself, or ones you download from the vast number available online.

GIMP's *current pattern*, used in most pattern-related operations, is shown in the Brush/Pattern/Gradient area of the Toolbox. Clicking on the pattern symbol brings up the <u>Patterns dialog</u>, which allows you to select a different pattern. You can also access the Patterns dialog by menu, or dock it so that it is present continuously.

To add a new pattern to the collection, so that it shows up in the Patterns dialog, you need to save it in a format GIMP can use, in a folder included in GIMP's pattern search path. There are several file formats you can use for patterns:

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PAT

The .pat format is used for patterns which were created specifically for GIMP. You can convert any image into a .pat file by opening it in GIMP and then saving it using a file name ending in .pat.



Caution

Do not confuse GIMP-generated .pat files with files created by other programs (e.g. Photoshop) – after all, .pat is just a part of an (arbitrary) file name.

(However, GIMP *does* support Photoshop .pat files until a certain version.)

PNG, JPEG, BMP, GIF, TIFF

You can use .png, .jpg, .bmp, .gif, or .tiff files as patterns.

To make a pattern available, you place it in one of the folders in GIMP's pattern search path. By default, the pattern search path includes two folders, the system patterns folder, which you should not use or alter, and the patterns folder inside your personal GIMP directory. You can add new folders to the pattern search path using the Pattern page of the Preferences dialog. Any PAT file (or any of the other acceptable formats) included in a folder in the pattern search path will show up in the Patterns dialog the next time you start GIMP.



Note

You can add a new pattern quickly as you do for brushes. See Section 5.4, "Creating a brush quickly".

There are countless ways of creating interesting pattern images in GIMP, using the wide variety of available tools and filters -- particularly the rendering filters. You can find tutorials for this in many locations, including the GIMP home page [GIMP]. Some of the filters have options that allows you to make their results tileable. Also, see Section 3.13, "Tileable Blur", this filter allows you to blend the edges of an image in order to make it more smoothly tileable.

+





6. Gradients



8. Palettes

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8. Palettes



Chapter 7. Painting with GIMP



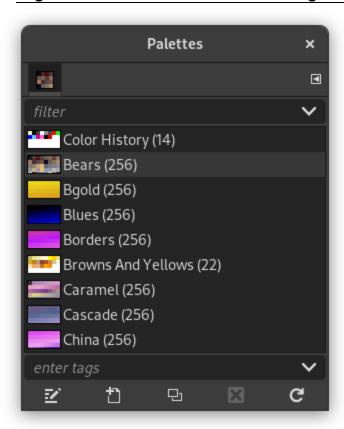
8. Palettes

A palette is a set of discrete colors. In GIMP, palettes are used mainly for two purposes:

- They allow you to paint with a selected set of colors, in the same way an oil painter works with colors from a limited number of tubes.
- They form the colormaps of indexed images. An indexed image can use a maximum of 256 different colors, but these can be any colors. The colormap of an indexed image is called an "indexed palette" in GIMP.

Actually neither of these functions fall very much into the mainstream of GIMP usage: it is possible to do rather sophisticated things in GIMP without ever dealing with palettes. Still, they are something that an advanced user should understand, and even a less advanced user may need to think about them in some situations, as for example when working with GIF files.

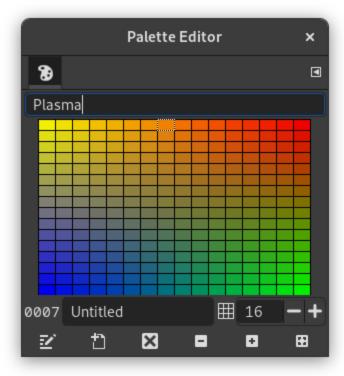
Figure 7.28. The Palettes dialog



When you install GIMP, it comes supplied with several dozen predefined palettes, and you can also create new ones. Some of the predefined palettes are commonly useful, such as the "Web" palette, which contains the set of colors considered "web safe"; many of the palettes seem to have been chosen more or less whimsically. You can access all of the available palettes using the Palettes dialog. This is also the starting point if you want to create a new palette.

Figure 7.29. The Palette Editor

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Double-clicking on a palette in the Palettes dialog brings up the Palette Editor, showing the colors from the palette you clicked on. You can use this to paint with the palette: clicking on a color sets GIMP's foreground to that color, as shown in the Color Area of the Toolbox. Holding down the Ctrl key while clicking, on the other hand, sets GIMP's background color to the color you click on.

You can also, as the name implies, use the Palette Editor to change the colors in a palette, so long as it is a palette that you have created yourself. You cannot edit the palettes that are supplied with GIMP; however you can duplicate them and then edit the copies.

When you create palettes using the Palette Editor, they are automatically saved as soon as you exit GIMP, in the palettes folder of your personal GIMP directory. Any palette files in your directory, or in the system palettes directory created when GIMP is installed, are automatically loaded and shown in the Palettes dialog the next time you start GIMP. You can also add other folders to the palette search path using the <u>Palette Folders</u> page of the Preferences dialog.

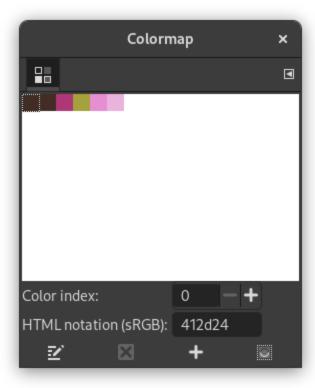
GIMP palettes are stored using a special file format, in files with the extension .gpl. It is a very simple format, and they are ASCII files, so if you happen to obtain palettes from another source, and would like to use them in GIMP, it probably won't be very hard to convert them: just take a look at any .gpl and you will see what to do.

8.1. Colormap

Confusingly, GIMP makes use of two types of palettes. The more noticeable are the type shown in the Palettes dialog: palettes that exist independently of any image. The second type, *indexed palettes*, form the colormaps of indexed images. Each indexed image has its own private indexed palette, defining the set of colors available in the image: the maximum number of colors allowed in an indexed palette is 256. These palettes are called "indexed" because each color is associated with an index number. (Actually, the colors in ordinary palettes are numbered as well, but the numbers have no functional significance.)

Figure 7.30. The Colormap dialog

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The colormap of an indexed image is shown in the Indexed Palette dialog, which should not be confused with the Palettes dialog. The Palettes dialog shows a list of all of the palettes available; the Colormap dialog shows the colormap of the currently active image, if it is an indexed image - otherwise it shows nothing.

You can, however, create an ordinary palette from the colors in an indexed image—actually from the colors in any image. To do this, choose Import Palette from the right-click popup menu in the Palettes dialog: this pops up a dialog that gives you several options, including the option to import the palette from an image. (You can also import any of GIMP's gradients as a palette.) This possibility becomes important if you want to create a set of indexed images that all use the same set of colors.

When you convert an image into indexed mode, a major part of the process is the creation of an indexed palette for the image. How this happens is described in detail in Section 6.6, "Indexed mode". Briefly, you have several methods to choose from, one of which is to use a specified palette from the Palettes dialog.

Thus, to sum up the foregoing, ordinary palettes can be turned into indexed palettes when you convert an image into indexed mode; indexed palettes can be turned into ordinary palettes by importing them into the Palettes dialog.











9. Presets

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9. Presets



Chapter 7. Painting with GIMP



9. Presets

If you often use tools with particular settings, presets are for you. Presets are saved settings for a tool that you can easily restore when needed. You can give each preset its own name to make it easier to choose the preset you need.



Four buttons at the bottom of all tool options dialogs allow you to <u>save</u>, <u>restore</u>, <u>delete</u>, or <u>reset</u> presets. An overview of all tool presets is available in the <u>Tool Presets Dialog</u>. From there you can select and update individual presets.







8. Palettes



10. Drawing Simple Objects

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10. Drawing Simple Objects



Chapter 7. Painting with GIMP



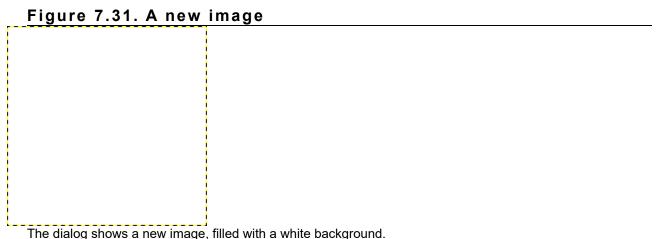
10. Drawing Simple Objects

In this section, you will learn how to create simple objects in GIMP.

10.1. Drawing a Straight Line

Let's begin by painting a straight line. The easiest way to create a straight line is by using your favorite <u>brush tool</u>, the mouse and the keyboard.

1. Create a New Image



Create a new image.

2. Choose a Tool

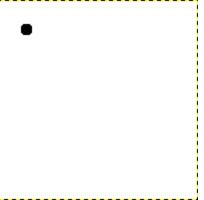
Select a <u>brush tool</u> from the <u>Toolbox</u>, for example the <u>Pencil</u> tool or the <u>Paintbrush</u> tool.

3. Select a Color

Select a foreground color, but be sure that the foreground and background colors are different.

4. Create a Starting Point

Figure 7.32. The start of the straight line



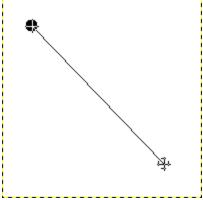
The dialog shows a new image, with the first dot which indicates the start of the straight line. The dot has a black foreground color.

The size of this dot represents the current brush size, which you can change in the **Brush Dialog**.

Create a starting point by clicking on the <u>image display</u> area with the left mouse button. Your canvas should look similar to <u>Figure 7.31, "A new image"</u>.

5. **Draw the Line**



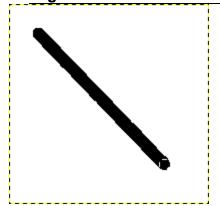


The screenshot shows the helpline, which indicates how the finished line will look.

Now, hold down the **Shift** key on your keyboard and move the mouse away from the starting point you created. You'll see a thin line indicating how the line will look.

6. Finish the Line

Figure 7.34. The line after the second click



The line created appears in the image window after drawing the second point (or end point), while the **Shift** key is still pressed.

If you're satisfied with the direction and length of the line, click the left mouse button again to finish the line. The last step is to let go of the **Shift** key. GIMP displays a straight line now.

10.1.1. Examples

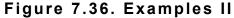
Figure 7.35. Examples I

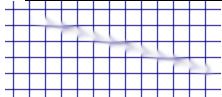


Set Dynamics to "Color From Gradient" and set Color Options to "Incandescent". Under Fade Options, set Repeat to "Truncate". Depending on the size of your underlying image, you might want to change the Fade length as well.



Select the Clone tool and set the source to "Maple Leaves" pattern.





Use Filters → Render → Pattern → Grid to create a grid. Use the Smudge Tool to draw a line with a slightly larger brush.



Use Filters \rightarrow Render \rightarrow Noise \rightarrow Plasma to create the cool plasma cloud. Use the Erase Tool with a square brush to draw a line.

Figure 7.37. Example III



Use the rectangle select tool to select a rectangle, and then fill the selection with a light blue color. Select the Dodge/Burn tool. Set the type to Dodge and paint along the top and left side using an appropriately sized brush. Set the type to Burn and paint along the right and bottom.



9. Presets

1



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10.2. Creating a Basic Shape



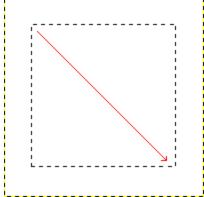
10. Drawing Simple Objects



10.2. Creating a Basic Shape

1. GIMP is not designed to be used for drawing. [3] However, you may create shapes by either painting them using the technique described in Section 10.1, "Drawing a Straight Line" or by using the selection tools. Of course, there are various other ways to paint a shape, but we'll stick to the easiest ones here. So, create a new image and check that the foreground and background colors are different.

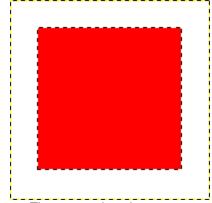
2. Figure 7.38. Creating a rectangular selection



The screenshot shows how a rectangular selection is created. Press and hold the left mouse button while you move the mouse in the direction of the red arrow.

Basic shapes like rectangles or ellipses, can be created using the <u>selection tools</u>. This tutorial uses a rectangular selection as an example. So, choose the <u>rectangular selection tool</u> and create a new selection: press and hold the left mouse button while you move the mouse to another position in the image (illustrated in <u>Figure 7.38, "Creating a rectangular selection"</u>). The selection is created when you release the mouse button. For more information about key modifiers see <u>selection tools</u>.

3. Figure 7.39. Rectangular selection filled with foreground color



The screenshot shows a rectangular selection filled with the foreground color.

After creating the selection, you can either create a filled or an outlined shape with the foreground color of your choice. If you go for the first option, choose a <u>foreground color</u> and fill the selection with the <u>Bucket Fill</u> tool. If you choose the latter option, create an outline by using the <u>Stroke Selection</u> menu item from the Edit menu. If you're satisfied with the result, <u>remove the selection</u>.

 $\underline{^{[3]}}\text{Try out e.g. }\underline{\text{[INKSCAPE]}}$ for this purpose.



10. Drawing Simple Objects







Chapter 8. Combining Images

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Chapter 8. Combining Images



Part II. How do I Become a GIMP Wizard?



Chapter 8. Combining Images

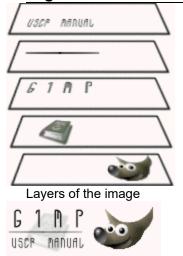
Table of Contents

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- 3. Legacy Layer Modes
- 4. Creating New Layers
- 5. Layer Groups

1. Introduction to Layers

You can think of layers as a stack of slides. Using layers, you can construct an image of several conceptual parts, each of which can be manipulated without affecting any other part of the image. Layers are stacked on top of each other. The bottom layer is the background of the image, and the components in the foreground of the image come above it.





Resulting image

There is no limit to the number of layers an image can have, only the amount of memory available on the system. It is not uncommon for advanced users to work with images containing dozens of layers. You can group layers to make your work easier, and there are many commands to handle layers.

The organization of layers in an image is shown in the Layers dialog. How it works is described in detail in the Layers Dialog section, but we will touch some aspects of it here, in relation to the layer properties that they display. Each open image has at any time a single *active drawable*. A "drawable" is a GIMP concept that includes layers, but also several other items, such as channels, layer masks, and the selection mask. Basically, a "drawable" is anything that can be drawn on with painting tools. If a layer is currently active, it is shown highlighted in the Layers dialog, and its name is shown in the status area of the image window. If not, you can activate it by clicking on it. If none of the layers are highlighted, it means the active drawable is something else than a layer.

In the menu bar, you can find a menu called Layer, containing a number of commands that affect the active layer of the image. The same menu can be accessed by right-clicking in the Layers dialog.

1.1. Layer Properties

Each layer in an image has a number of important attributes:

Name

Every layer has a name. This is assigned automatically when the layer is created, but you can change it. You can change the name of a layer either by double-clicking on it in the Layers dialog, or by right-clicking there, and then selecting the top entry in the menu that appears, Edit Layer Attributes.

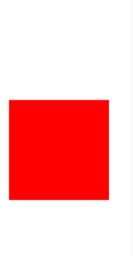
Presence or absence of an alpha channel

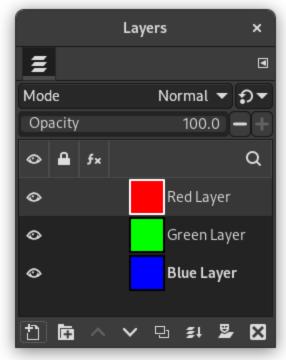
An alpha channel encodes information about how transparent a layer is at each pixel. It is visible in the Channels dialog: white is complete opacity, black is complete transparency and gray levels are partial transparencies.

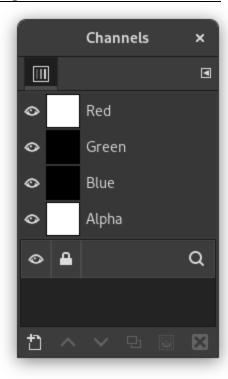
The *background layer* is special. If you have just created a new image, it only has one layer, which is the background layer. If the image has been created with an opaque Fill type, this one layer has no Alpha channel. To get a background layer with transparency, either create your new image with a transparent Fill type, or you use the Add an Alpha Channel command.

If you add a *new layer*, even with an opaque Fill type, an Alpha channel is automatically added to the layer. Every layer other than the bottom layer of an image automatically has an Alpha channel, but you can't see a grayscale representation of the alpha values. See <u>Alpha</u> in Glossary for more information. **Example for Alpha channel.**

Figure 8.2. Alpha channel example: Basic image

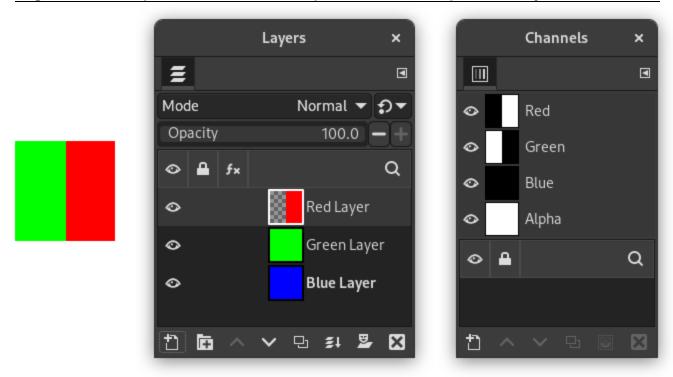






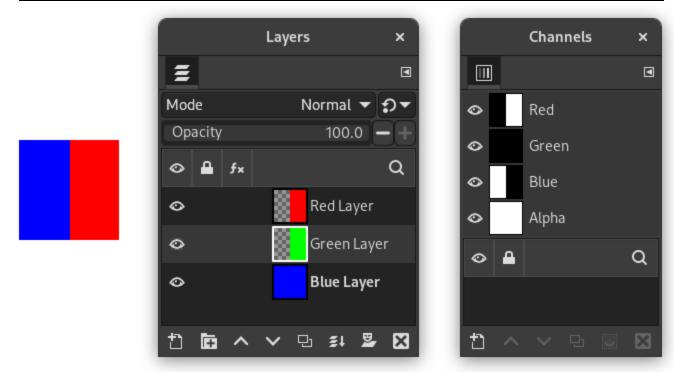
The image on the left has three layers painted with pure 100% opaque Red, Green, and Blue. In the Channels dialog, you can see that an Alpha channel has been added. It is white because the image is not transparent since there is at least one 100% opaque layer. The current layer is the red one: since it is painted with pure red, there is no green and no blue and the corresponding channels are black.

Figure 8.3. Alpha channel example: One transparent layer



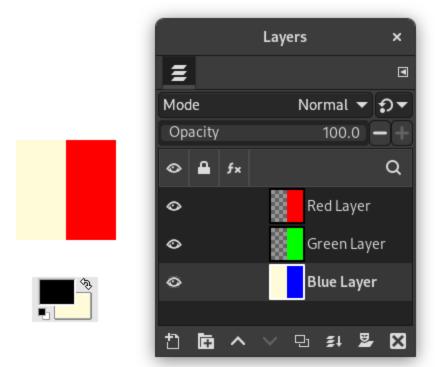
The left part of the first layer has been made transparent (via Section 2.2, "Rectangle Selection", then Edit \rightarrow Clear). The second layer, green, is visible. The Alpha channel is still white, since there is an opaque layer in this part of the image.

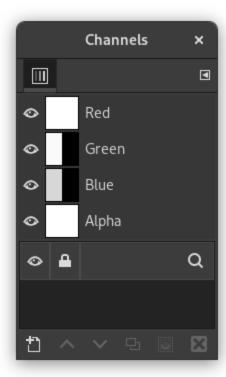
Figure 8.4. Alpha channel example: Two transparent layers



The left part of the second layer has been made transparent. The third layer, blue, is visible through the first and second layers. The Alpha channel is still white, since there is an opaque layer in this part of the image.

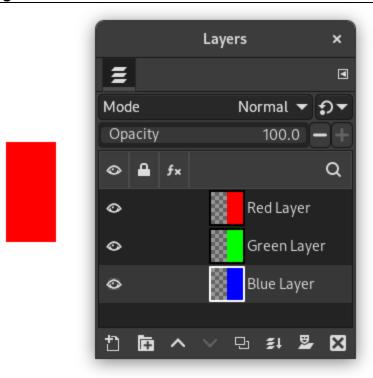
Figure 8.5. Alpha channel example: Three transparent layers

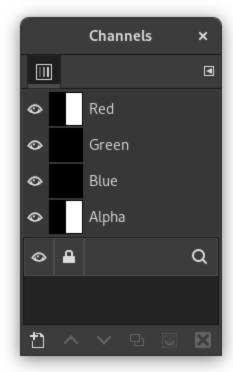




The left part of the third layer has been cleared. The Alpha channel is still white and the left part of the layer is opaque, because the background layer has no Alpha channel. In this case, the Clear command works like the <u>Eraser</u> and uses the <u>Background color of Toolbox</u>.

Figure 8.6. Alpha channel example: Alpha channel added to the Background





We used the Layer \rightarrow Transparency \rightarrow Add Alpha Channel command, on the Background layer. Now, the left part of the image is fully transparent and has the color of the page where the image is shown. The left part of the Alpha Channel thumbnail is black (transparent) in the Channels dialog.

Layer type

The layer type is determined by the image type (see previous section), and the presence or absence of an alpha channel. These are the possible layer types:

- RGB
- RGBA
- Gray
- GrayA
- Indexed
- IndexedA

The main reason this matters is that some filters (in the Filters menu) only accept a subset of layer types, and appear disabled in the menu if the active layer does not have a supported type. Often you can rectify this either by changing the mode of the image, or by adding or removing an alpha channel.

Visibility

It is possible to remove a layer from an image, without destroying it, by clicking on the symbol in the Layers dialog. This is called "toggling the visibility" of the layer. Most operations on an image treat toggled-off layers as if they did not exist. When you work with images containing many layers, with varying opacity, you often can get a better picture of the contents of the layer you want to work on by hiding some of the other layers.



Tip

If you *Shift*-click on the eye symbol, this will cause all layers *except* the one you click on to be hidden.

Active layer

Usually, you activate a layer, to work on it, clicking it in the layer list. When you have a lot of layers, finding which layer an element of the image belongs to is not easy: then, press Alt and click with Mouse wheel on this element to activate its layer. The available layers will be looped through (starting from the upper one) while the Alt is held and the picked layer will be temporarily displayed in the status bar.

Layer Lock Settings

If you click to the right of the eye icon, you can select the lock settings for the layer.

f× Layer Effects

Directly to the left of the image thumbnail, you will see the Layer Effects icon if that layer has effects added to it.

Size and boundaries

In GIMP, the boundaries of a layer do not necessarily match the boundaries of the image that contains it. When you create text, for example, each text item belongs to its own separate layer, and the layer size is automatically adjusted to contain the text and nothing more. Also, when you create a new layer using cut-and-paste, the new layer is sized just large enough to contain the pasted item. In the image window, the boundaries of the currently active layer are shown outlined with a black-and-yellow dashed line.

The main reason why this matters is that you cannot do anything to a layer outside of its boundaries, unless you enabled Expand Layers in the <u>Paint Tool Options</u>. If this causes you problems, you can alter the dimensions of the layer using any of several commands that you can find near the bottom of the Layer menu.



Note

The amount of memory that a layer consumes is determined by its dimensions, not its contents. So, if you are working with large images or images that contain many layers, it might pay off to trim layers to the minimum possible size.

Opacity

The opacity of a layer determines the extent to which it lets colors from layers beneath it in the stack show through. Opacity ranges from 0 to 100, with 0 meaning complete transparency, and 100 meaning complete opacity.

Mode

The Mode of a layer determines how colors from the layer are combined with colors from the underlying layers to produce a visible result. This is a sufficiently complex, and sufficiently important, concept to deserve a section of its own, which follows. See Section 2, "Layer Modes".

Layer mask

In addition to the alpha channel, there is another way to control the transparency of a layer: by adding a *layer mask*, which is an extra grayscale drawable associated with the layer. A layer does not have a layer mask by default: it must be added specifically. Layer masks, and how to work with them, are described much more extensively in the <u>Layer Mask</u> section.



10.2. Creating a Basic Shape

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2. Layer Modes

2. Layer Modes



Chapter 8. Combining Images



2. Layer Modes

GIMP has thirty-eight layer modes, split up in seven groups: Normal, Lighten, Darken, Contrast, Inversion, HSV components, and LCh components. In addition to these layer modes, there are also the so-called legacy layer modes, which were used before GIMP 2.10. They are still available for backwards compatibility with saved images from older GIMP versions, but should normally not be used when creating new images.

Layer modes are also called "blending modes". Selecting a layer mode changes the appearance of the layer or image, based on the layer or layers beneath it. Each layer in an image can have a different layer mode. The effects of these layer modes are cumulative. However, setting the mode to anything but Normal for the bottom layer of any layer group and the bottom layer of the image has no effect.

You can set the layer mode in the Mode drop-down menu at the top of the <u>Layers Dialog</u>. GIMP uses the layer mode to determine how to combine each pixel in the top layer with the pixel in the same location in the layer below it

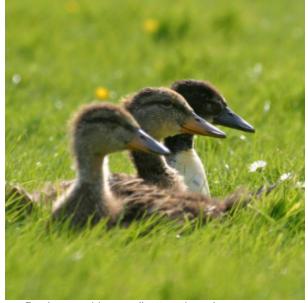


Note

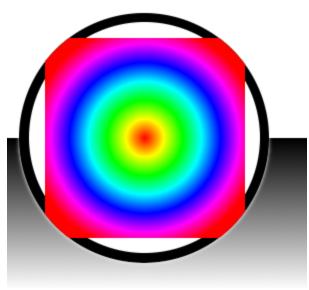
When the active tool is a painting tool, there is a drop-down list in the Tool Options which contains modes that affect the painting tools in a similar way to the layer modes. You can use all of the same modes for painting that are available for layers, and there are additional modes just for the painting tools. See <u>Section 3.1.3</u>, "Paint Mode Examples".

Layer modes permit complex color changes in the image. They are often used with a new layer which acts as a kind of mask. For example, if you put a solid white layer over an image and set the layer mode of the new layer to "HSV Saturation", the underlying visible layers will appear in shades of gray.





Background image (bottom layer)



Mask (top layer)

The examples below show the effects of each of the layer modes. Each example will also describe the effect of the layer mode.

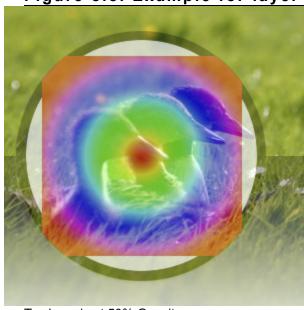
Since the results of each mode vary greatly depending upon the colors on the layers, these images can only give you a general idea of how the modes work. You are encouraged to try them out yourself. You might start with two similar layers, where one is a copy of the other, but slightly modified (by being blurred, moved, rotated, scaled, color-inverted, etc.), and see what happens when you change the layer mode of the top layer.

2.1. Normal Layer Modes

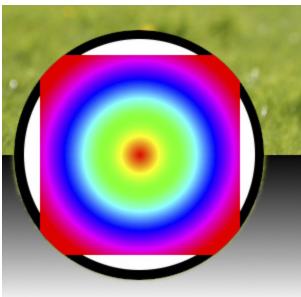
The "Normal" group is a bit of a misnomer. Most of the modes besides "Normal" are cancellation modes.

Normal

Figure 8.8. Example for layer mode "Normal"



Top layer is at 50% Opacity.

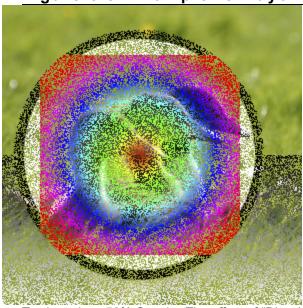


With 100% opacity for the top layer, only the upper layer is shown when blending with "Normal", except for the transparent areas.

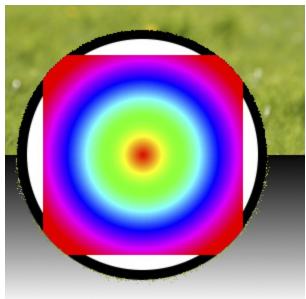
Normal mode is the default layer mode. The layer on top covers the layers below it. If you want to see anything below the top layer when you use this mode, the layer must have some transparent areas.

Dissolve

Figure 8.9. Example for layer mode "Dissolve"



Top layer is at 50% Opacity. The effect of "Dissolve" is visible everywhere, except in areas that are completely transparent.

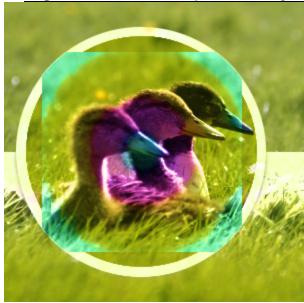


With 100% opacity of the top layer, only some edges that are semi transparent are affected by "Dissolve".

Dissolve mode dissolves the upper layer into the layer beneath it by drawing a random pattern of pixels in areas of partial transparency. This is especially visible along the edges within an image. It can be useful as a layer mode, but it is also often used as a painting mode.

Color Erase

Figure 8.10. Example for layer mode "Color Erase"



Top layer at 100% opacity using "Color Erase" mode.

Color Erase mode erases the colors in the upper layer from the lower layer. Black pixels in the upper layer make those parts in the bottom layer transparent, while white pixels have no effect. Anything in between removes those specific colors from the bottom layer, leaving the other color components intact.

Erase

Figure 8.11. Example for layer mode "Erase"

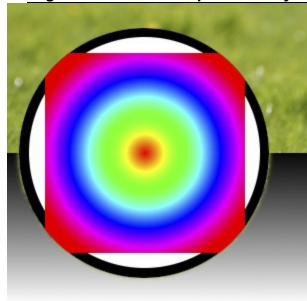


Top layer at 100% opacity using "Erase" mode. The white parts here are transparent.

Erase mode erases any non transparent area of the upper layer from the lower layer, making those parts in the bottom layer transparent.

Merge

Figure 8.12. Example for layer mode "Merge"

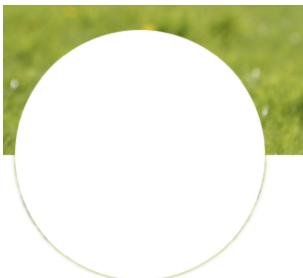


Top layer at 100% opacity using "Merge" mode.

Merge mode lays the source layer on top of the destination, the same as normal mode. However, it assumes the source and destination are two parts of an original whole, and are therefore mutually exclusive. This is useful for blending cut and pasted content without artifacts, or for replacing erased content in general.

Split

Figure 8.13. Example for layer mode "Split"



Top layer at 100% opacity using "Split" mode. The white parts here are transparent.

Split mode subtracts the source layer from the destination, such that recompositing the result with the source using merge mode reproduces the original content.







Chapter 8. Combining Images

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/

2.2. Lighten Layer Modes

2.2. Lighten Layer Modes





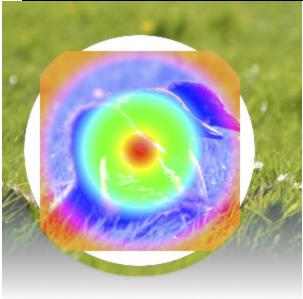


2.2. Lighten Layer Modes

The "Lighten" group contains layer modes that make the result lighter.

Lighten only





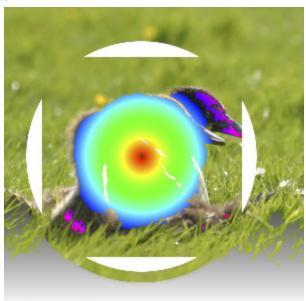
Top layer at 100% opacity using "Lighten only" mode.

Lighten only mode compares each component of each pixel in the upper layer with the corresponding one in the lower layer and uses the larger value in the resulting image. Completely black layers have no effect on the final image and completely white layers result in a white image.

The mode is commutative; the order of the two layers doesn't matter (except for transparent areas in the bottom layer).

Luma/Luminance lighten only

Figure 8.15. Example for layer mode "Luma/Luminance lighten only"



Top layer at 100% opacity using "Luma/Luminance Lighten only" mode.

Luma/Luminance Lighten only mode compares the luminance of each pixel in the upper layer with the corresponding one in the lower layer and uses the larger value in the resulting image. Completely black layers have no effect on the final image and completely white layers result in a white image. Luma is the perceptual version of Luminance.

The mode is commutative; the order of the two layers doesn't matter (except for transparent areas in the bottom layer).

Screen

Figure 8.16. Example for layer mode "Screen"



Top layer at 100% opacity using "Screen" mode.

Screen mode inverts the values of each of the visible pixels in the two layers of the image. (That is, it subtracts each of them from 1.0.) Then it multiplies them together, and inverts this value again. The resulting image is usually brighter, and sometimes "washed out" in appearance. The exceptions to this are a black layer, which does not change the other layer, and a white layer, which results in a white image. Darker colors in the image appear to be more transparent.

The mode is commutative; the order of the two layers doesn't matter.

Dodge

Figure 8.17. Example for layer mode "Dodge"



Top layer at 100% opacity using "Dodge" mode.

Dodge mode divides the pixel value of the lower layer by the inverse of the pixel value of the top layer. The resulting image is usually lighter, but some colors may be inverted.

In photography, dodging is a technique used in a darkroom to decrease the exposure in particular areas of the image. This brings out details in the shadows. When used for this purpose, dodge may work best on Grayscale images and with a painting tool, rather than as a layer mode.

Addition

Figure 8.18. Example for layer mode "Addition"



Top layer at 100% opacity using "Addition" mode.

Addition mode is very simple. The pixel values of the upper and lower layers are added to each other. The resulting image is usually lighter. The equation can result in color values greater than 1.0.

The mode is commutative; the order of the two layers doesn't matter.









2.3. Darken Layer Modes

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2.3. Darken Layer Modes







2.3. Darken Layer Modes

The "Darken" group contains layer modes that make the result darker.

Darken only





Top layer at 100% opacity using "Darken only" mode.

Darken only mode compares each component of each pixel in the upper layer with the corresponding one in the lower layer and uses the smaller value in the resulting image. Completely white layers have no effect on the final image and completely black layers result in a black image.

The mode is commutative; the order of the two layers doesn't matter.

Luma/Luminance darken only

Figure 8.20. Example for layer mode "Luma/luminance darken only"

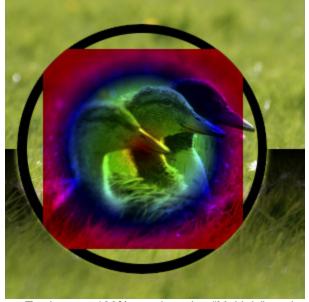


Top layer at 100% opacity using "Luma/Luminance Darken only" mode.

Luma/luminance Darken only mode compares the luminance of each pixel in the upper layer with the corresponding one in the lower layer and uses the smaller value in the resulting image. Completely white layers have no effect on the final image and completely black layers result in a black image. Luma is the perceptual version of Luminance. The mode is commutative; the order of the two layers doesn't matter (except for transparent areas in the bottom layer).

Multiply

Figure 8.21. Example for layer mode "Multiply"



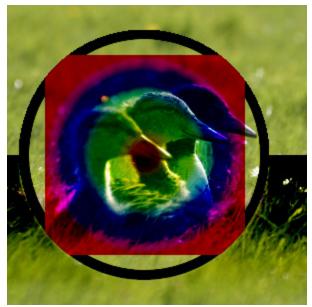
Top layer at 100% opacity using "Multiply" mode.

Multiply mode multiplies the pixel values of the upper layer with those of the layer below it. The result is usually a darker image. If either layer is white, the resulting image is the same as the other layer. If either layer is black, the resulting image is completely black.

The mode is commutative; the order of the two layers doesn't matter (except for transparent areas in the bottom layer).

Burn

Figure 8.22. Example for layer mode "Burn"



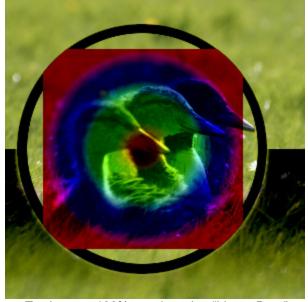
Top layer at 100% opacity using "Burn" mode.

Burn mode inverts the pixel value of the lower layer, divides that by the pixel value of the upper layer, then inverts the result. It tends to make the image darker, somewhat similar to "Multiply" mode.

In photography, burning is a technique used in a darkroom to increase the exposure in particular areas of the image. This brings out details in the highlights. When used for this purpose, burn may work best on Grayscale images and with a painting tool, rather than as a layer mode.

Linear burn

Figure 8.23. Example for layer mode "Linear burn"



Top layer at 100% opacity using "Linear Burn" mode.

Linear Burn mode adds the pixel values of the upper and lower layers, and then subtracts 1.0. It tends to make the image darker, somewhat similar to "Multiply" mode.



2.2. Lighten Layer Modes







2.4. Contrast Layer Modes

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2.4. Contrast Layer Modes



2. Layer Modes



2.4. Contrast Layer Modes

The "Contrast" group contains layer modes that enhance contrast.

Overlay

Figure 8.24. Example for layer mode "Overlay"



Top layer at 100% opacity using "Overlay" mode.

Overlay mode multiplies the upper layer with two times the lower layer when the component value of the lower layer is less than 0.5. When the component value is greater than or equal to 0.5, it inverts the components of the lower and upper layer, multiplies those values, then multiplies with 2.0, and then inverts the result. It darkens the image, but not as much as with "Multiply" mode.

Soft light

Figure 8.25. Example for layer mode "Soft light"

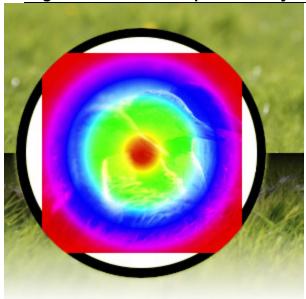


Top layer at 100% opacity using "Soft Light" mode.

Soft light is not related to "Hard light" in anything but the name, but it does tend to make the edges softer and the colors not so bright. It is similar to "Overlay" mode. Soft light has a more complicated formula. It uses the result of Multiply mode, then multiplies that with the inverse of the lower layer; then adds to that the multiplication of the result of Screen mode with the lower layer.

Hard light

Figure 8.26. Example for layer mode "Hard light"

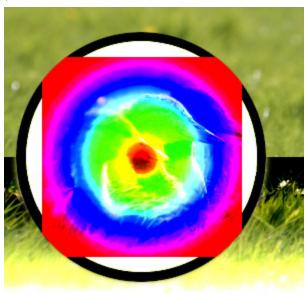


Top layer at 100% opacity using "Hard Light" mode.

Hard light mode is rather complicated because the equation consists of two parts, one for darker color components and one for lighter ones. If the color component of the upper layer is greater than 0.5, the inverse of the lower layer is multiplied with the inverse of: the upper layer minus 0.5 times 2.0. Then the result of this is compared with the inverse of this result and the lower value of both is used. If the color component of the upper layer is less than or equal to 0.5, the lower layer is multiplied with 2 times the upper layer. The result of that is compared with 1.0 and the lower value of that is used. You might use this mode to combine two photographs and obtain bright colors and sharp edges.

Vivid light

Figure 8.27. Example for layer mode "Vivid light"

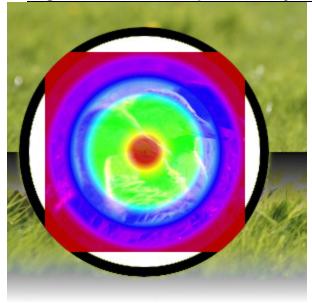


Top layer at 100% opacity using "Vivid Light" mode.

Vivid light mode, increases contrast very strongly, especially in highlights and shadows. The effect is a combination of Burn (in the shadows) and Dodge (in the highlights), apart from the doublings in the denominators. This mode also consists of two parts depending on the color component value, where 0.5 is the limit, the same as with Hard light. If the upper layer value is smaller than or equal to 0.5: divide the inverse of the lower layer by 2 times the upper layer and invert the result. If the result is less than zero, return zero. If the upper layer value is greater than 0.5: divide the lower layer by two times the inverse of the upper layer. If the result is larger than 1.0, return 1.0.

Pin light

Figure 8.28. Example for layer mode "Pin light"

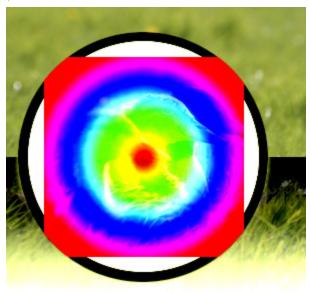


Top layer at 100% opacity using "Pin Light" mode.

Pin light mode is a combination of the Darken and Lighten modes. Mid-tone regions remain almost uninfluenced. If the component value of the upper layer is greater than 0.5: subtract 0.5 from the upper layer and multiply by 2.0. Then the result is the maximum from this value and the value of the lower layer. If the component value is less than or equal to 0.5: take the minimum value of the lower layer and two times the upper layer.

Linear light

Figure 8.29. Example for layer mode "Linear light"

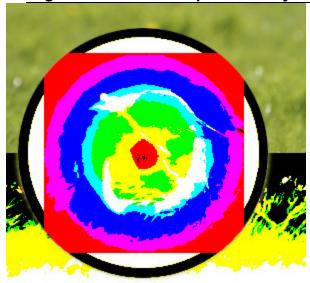


Top layer at 100% opacity using "Linear Light" mode.

Linear light mode increases contrast slightly less than vivid light. It resembles Burn, but with twice the impact on the foreground's tonal values. If the component value is less than or equal to 0.5: the result is the lower layer plus two times the upper layer minus 1.0. If the component value is greater than 0.5: subtract 0.5 from the upper layer and multiply by 2.0, then add the lower layer.

Hard mix

Figure 8.30. Example for layer mode "Hard mix"



Top layer at 100% opacity using "Hard Mix" mode.

Hard mix mode only contains the six primary colors, black and white. The upper and lower layer components are added together. Any component which is more than or equal to 1.0 is set to 1. Anything else is set to 0.



2.3. Darken Layer Modes

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2.5. Inversion Layer Modes

2.5. Inversion Layer Modes



2. Layer Modes

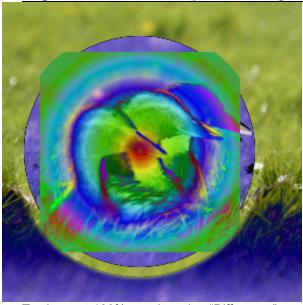


2.5. Inversion Layer Modes

The "Inversion" group contains layer modes that invert the colors in one way or another.

Difference

Figure 8.31. Example for layer mode "Difference"



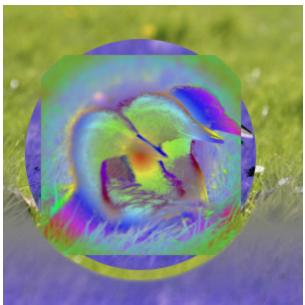
Top layer at 100% opacity using "Difference" mode.

Difference mode subtracts the pixel value of the upper layer from that of the lower layer and then takes the absolute value of the result. This mode can be used to compare two layers. If they are identical the difference is zero (black), otherwise the result shows the variance of the tonal values in each pixel. A white foreground inverts the background whereas a white background inverts the foreground.

The mode is commutative; the order of the two layers doesn't matter.

Exclusion

Figure 8.32. Example for layer mode "Exclusion"



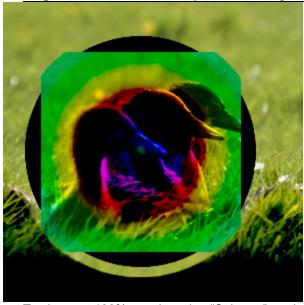
Top layer at 100% opacity using "Exclusion" mode.

Exclusion mode causes inversion to the other layer for bright regions, very dark regions change nothing at all. In this way this mode resembles Difference mode. However, medium gray values greatly decrease contrast of the respective other layer, in extreme cases up to zero.

The mode is commutative; the order of the two layers doesn't matter.

Subtract

Figure 8.33. Example for layer mode "Subtract"

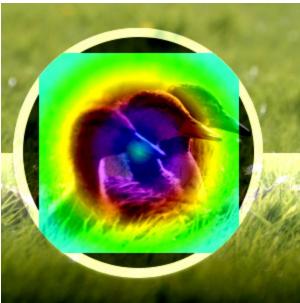


Top layer at 100% opacity using "Subtract" mode.

Subtract mode subtracts the pixel values of the upper layer from the pixel values of the lower layer. The resulting image is normally darker. You might get a lot of black or near-black in the resulting image.

Grain extract

Figure 8.34. Example for layer mode "Grain extract"

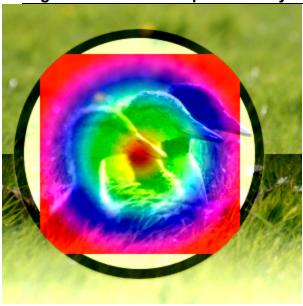


Top layer at 100% opacity using "Grain Extract" mode.

Grain extract mode is supposed to extract the "film grain" from a layer to produce a new layer that is pure grain, but it can also be useful for giving images an embossed appearance. It subtracts the pixel value of the upper layer from that of the lower layer and adds 0.5.

Grain merge

Figure 8.35. Example for layer mode "Grain merge"

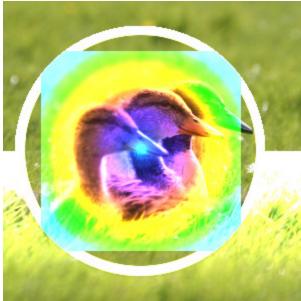


Top layer at 100% opacity using "Grain Merge" mode.

Grain merge mode merges a grain layer (possibly one created from the "Grain extract" mode) into the current layer, leaving a grainy version of the original layer. It does just the opposite of "Grain extract". It adds the pixel values of the upper and lower layers together and subtracts 0.5.

Divide

Figure 8.36. Example for layer mode "Divide"



Top layer at 100% opacity using "Divide" mode.

Divide mode divides each pixel value in the lower layer by the corresponding pixel value of the upper layer (while avoiding dividing by zero). The resulting image is often lighter, and sometimes looks "burned out".







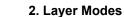




2.6. HSV Components Layer Modes

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2.6. HSV Components Layer Modes







2.6. HSV Components Layer Modes

The "HSV" group contains layer modes that make use of the HSV color model.

HSV Hue

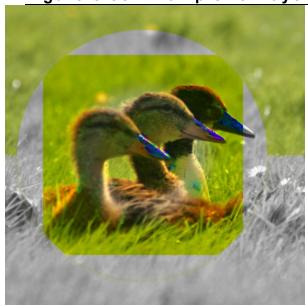
Figure 8.37. Example for layer mode "HSV Hue"



Top layer at 100% opacity using "HSV Hue" mode.

HSV Hue mode uses the Hue of the upper layer and the Saturation and Value of the lower layer to form the resulting image. However, if the Saturation of the upper layer is zero, the Hue is taken from the lower layer, too. HSV Saturation

Figure 8.38. Example for layer mode "HSV Saturation"

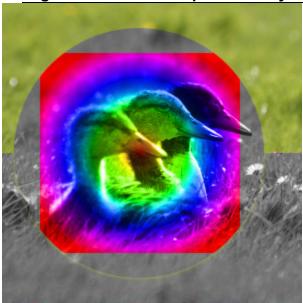


Top layer at 100% opacity using "HSV Saturation" mode.

HSV Saturation mode uses the Saturation of the upper layer and the Hue and Value of the lower layer to form the resulting image.

HSL Color

Figure 8.39. Example for layer mode "HSL Color"



Top layer at 100% opacity using "HSL Color" mode.

HSL Color mode uses the Hue and Saturation of the upper layer and the Lightness of the lower layer to form the resulting image.

HSV Value

Figure 8.40. Example for layer mode "HSV Value"



Top layer at 100% opacity using "HSV Value" mode.

HSV Value mode uses the Value of the upper layer and the Saturation and Hue of the lower layer to form the resulting image. You can use this mode to reveal details in dark and light areas of an image without changing the Saturation.



2.5. Inversion Layer Modes

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2.7. LCh Components Layer Modes

2.7. LCh Components Layer Modes



2. Layer Modes



2.7. LCh Components Layer Modes

The "LCh" group contains layer modes that make use of the LCh color model. "LCh" stands for Lightness, Chroma, Hue. It is mathematically derived from the CIELAB reference color space. See also <u>CIELCh</u>.

LCh Hue



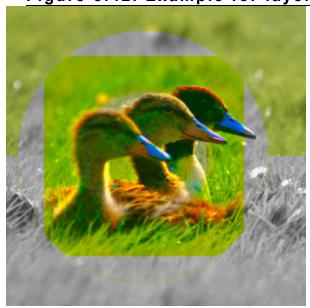


Top layer at 100% opacity using "LCh Hue" mode.

LCh Hue mode corresponds to HSV Hue but is based on different mathematical formulas.

LCh Chroma

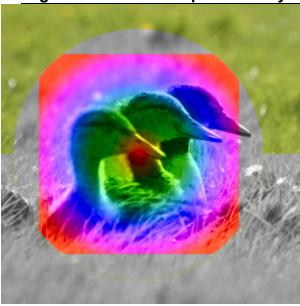
Figure 8.42. Example for layer mode "LCh Chroma"



Top layer at 100% opacity using "LCh Chroma" mode.

LCh Chroma mode corresponds to HSV Saturation but is based on different mathematical formulas. LCh Color

Figure 8.43. Example for layer mode "LCh Color"

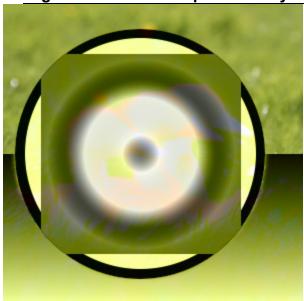


Top layer at 100% opacity using "LCh Color" mode.

LCh Color mode is a combination of LCh Chroma and LCh Hue, and corresponds to HSV Color, but is based on different mathematical formulas. See <u>A tutorial on GIMP's very awesome LCH Blend Modes</u> for information on using this layer mode.

LCh Lightness

Figure 8.44. Example for layer mode "LCh Lightness"

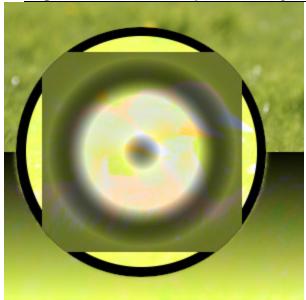


Top layer at 100% opacity using "LCh Lightness" mode.

LCh Lightness mode corresponds to HSV Value, but is based on different mathematical formulas. See <u>A tutorial on GIMP's very awesome LCH Blend Modes</u> for information on using this layer mode.

Luminance

Figure 8.45. Example for layer mode "Luminance"



Top layer at 100% opacity using "Luminance" mode.

Luminance mode is similar to CIE luminance, but does not alter saturation. It divides the upper layer luminance by the lower layer luminance; then uses that result to multiply with the lower layer component.







2.6. HSV Components Layer Modes





3. Legacy Layer Modes

3. Legacy Layer Modes



Chapter 8. Combining Images

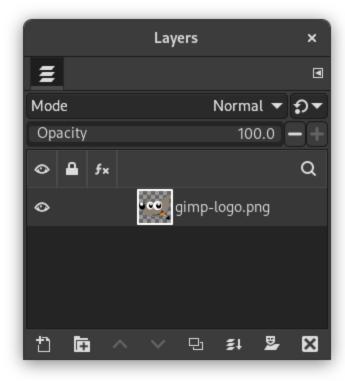


3. Legacy Layer Modes

Since GIMP 2.10 layer modes have changed. The old perceptual layer modes are still available for backwards compatibility. They are called "legacy layer modes". These legacy layer modes will be used when loading images made before the introduction of the new, mostly linear, layer modes.

For more information on layer modes in general, see the default Layer Modes.

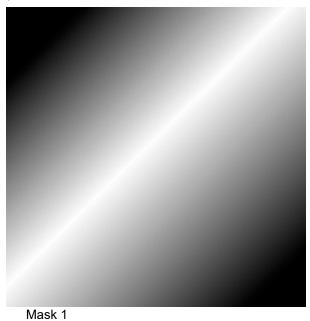
Figure 8.46. Selecting legacy layer mode



The Layers Dialog showing the 2 drop-down.

If you need to stay compatible with older GIMP versions or you need to use the legacy layer modes for other reasons, select the connext to the Mode drop-down and change the setting from Default to Legacy mode. The Mode drop-down will now only show legacy layer modes. All modes will have (legacy) behind their name (the selected mode will use the short version (I)).

Figure 8.47. Images (masks) used for the layer mode examples





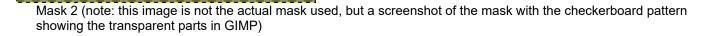


Figure 8.48. Images (backgrounds) used for the layer mode examples



Key fob



Ducks

In the descriptions of the layer modes below, the equations are also shown. This is for those who are curious about the mathematics of the layer modes. You do not need to understand the equations in order to use the layer modes. The equations are in a shorthand notation. For example, the equation

Equation 8.1. Example

means, "For each pixel in the upper (*M*ask) and lower (*I*mage) layer, add each of the corresponding color components together to form the *E* resulting pixel's color." Pixel color components must always be between 0 and 255.



Note

Unless the description below says otherwise, a negative color component is set to 0 and a color component larger than 255 is set to 255.

The examples below show the effects of each of the legacy modes. Note that for simplicity we will omit "(legacy)" when mentioning the layer modes here.

Since the results of each mode vary greatly depending upon the colors on the layers, these images can only give you a general idea of how the modes work. You are encouraged to try them out yourself. You might start with two similar layers, where one is a copy of the other, but slightly modified (by being blurred, moved, rotated, scaled, color-inverted, etc.) and seeing what happens with the layer modes.

Normal Layer Modes

Normal

In this group, only "Normal" is normal.

Figure 8.49. Example for layer mode "Normal"



Both images are blended into each other with the same intensity.



With 100% opacity only the upper layer is shown when blending with "Normal".

Normal mode is the default layer mode. The layer on top covers the layers below it. If you want to see anything below the top layer when you use this mode, the layer must have some transparent areas. The equation is:

Equation 8.2. Equation for layer mode "Normal"

Dissolve

Figure 8.50. Example for layer mode "Dissolve"



Both images are blended into each other with the same intensity.



With 100% opacity only the upper layer is shown when blending with "dissolve".

Dissolve mode dissolves the upper layer into the layer beneath it by drawing a random pattern of pixels in areas of partial transparency. It is useful as a layer mode, but it is also often useful as a painting mode. This is especially visible along the edges within an image. It is easiest to see in an enlarged screenshot. The image on the left illustrates "Normal" layer mode (enlarged) and the image on the right shows the same two layers in "Dissolve" mode, where it can be clearly seen how the pixels are dispersed.

Figure 8.51. Enlarged screenshots



Normal mode.



Dissolve mode.

Lighten Layer Modes

Lighten only

Figure 8.52. Example for layer mode "Lighten only"



Mask 1 is used as upper layer with 100% opacity.



Mask 2 is used as upper layer with 100% opacity.

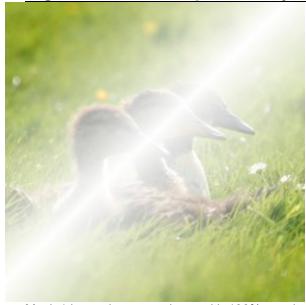
Lighten only mode compares each component of each pixel in the upper layer with the corresponding one in the lower layer and uses the larger value in the resulting image. Completely black layers have no effect on the final image and completely white layers result in a white image. The equation is:

Equation 8.3. Equation for layer mode "Lighten only"

The mode is commutative; the order of the two layers doesn't matter.

Screen

Figure 8.53. Example for layer mode "Screen"



Mask 1 is used as upper layer with 100% opacity.



Mask 2 is used as upper layer with 100% opacity.

Screen mode inverts the values of each of the visible pixels in the two layers of the image. (That is, it subtracts each of them from 255.) Then it multiplies them together, divides by 255 and inverts this value again. The resulting image is usually brighter, and sometimes "washed out" in appearance. The exceptions to this are a black layer, which does not change the other layer, and a white layer, which results in a white image. Darker colors in the image appear to be more transparent. The equation is:

Equation 8.4. Equation for layer mode "Screen"

The mode is commutative; the order of the two layers doesn't matter.

Dodge

Figure 8.54. Example for layer mode "Dodge"



Mask 1 is used as upper layer with 100% opacity.



Mask 2 is used as upper layer with 100% opacity.

Dodge mode multiplies the pixel value of the lower layer by 256, then divides that by the inverse of the pixel value of the top layer. The resulting image is usually lighter, but some colors may be inverted. In photography, dodging is a technique used in a darkroom to decrease the exposure in particular areas of the image. This brings out details in the shadows. When used for this purpose, dodge may work best on Grayscale images and with a painting tool, rather than as a layer mode. The equation is:

Equation 8.5. Equation for layer mode "Dodge"

Addition

Figure 8.55. Example for layer mode "Addition"



Mask 1 is used as upper layer with 100% opacity.



Mask 2 is used as upper layer with 100% opacity.

Addition mode is very simple. The pixel values of the upper and lower layers are added to each other. The resulting image is usually lighter. The equation can result in color values greater than 255, so some of the light colors may be set to the maximum value of 255. The equation is:

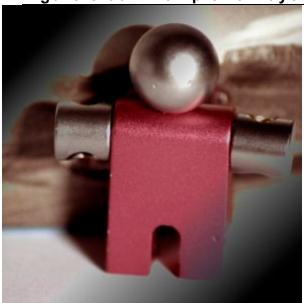
Equation 8.6. Equation for layer mode "Addition"

The mode is commutative; the order of the two layers doesn't matter.

Darken Layer Modes

Darken only

Figure 8.56. Example for layer mode "Darken only"



Mask 1 is used as upper layer with 100% opacity.



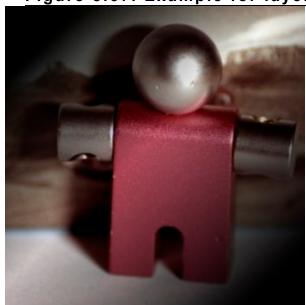
Mask 2 is used as upper layer with 100% opacity.

Darken only mode compares each component of each pixel in the upper layer with the corresponding one in the lower layer and uses the smaller value in the resulting image. Completely white layers have no effect on the final image and completely black layers result in a black image. The equation is:

Equation 8.7. Equation for layer mode "Darken only"

The mode is commutative; the order of the two layers doesn't matter. Multiply





Mask 1 is used as upper layer with 100% opacity.



Mask 2 is used as upper layer with 100% opacity.

Multiply mode multiplies the pixel values of the upper layer with those of the layer below it and then divides the result by 255. The result is usually a darker image. If either layer is white, the resulting image is the same as the other layer (1 * I = I). If either layer is black, the resulting image is completely black (0 * I = 0). The equation is:

Equation 8.8. Equation for layer mode "Multiply"

The mode is commutative; the order of the two layers doesn't matter.

Burn

Figure 8.58. Example for layer mode "Burn"



Mask 1 is used as upper layer with 100% opacity.



Mask 2 is used as upper layer with 100% opacity.

Burn mode inverts the pixel value of the lower layer, multiplies it by 256, divides that by one plus the pixel value of the upper layer, then inverts the result. It tends to make the image darker, somewhat similar to "Multiply" mode.

In photography, burning is a technique used in a darkroom to increase the exposure in particular areas of the image. This brings out details in the highlights. When used for this purpose, burn may work best on Grayscale images and with a painting tool, rather than as a layer mode. The equation is:

Equation 8.9. Equation for layer mode "Burn"

Contrast Layer Modes

Overlay

Figure 8.59. Example for layer mode "Overlay"



Mask 1 is used as upper layer with 100% opacity.



Mask 2 is used as upper layer with 100% opacity.

Overlay mode in theory inverts the pixel value of the lower layer, multiplies it by two times the pixel value of the upper layer, adds that to the original pixel value of the lower layer, divides by 255, and then multiplies by the pixel value of the original lower layer and divides by 255 again.

Due to a bug [4] the actual equation is equivalent to Soft light. This will not be fixed for the legacy layer mode. However, even if you explicitly use legacy layer mode, GIMP will still set the default Overlay layer mode. Images that have the legacy Overlay mode set for a layer, will have that changed to legacy Soft light, since that's what it effectively is.

Soft light

Figure 8.60. Example for layer mode "Soft light"



Mask 1 is used as upper layer with 100% opacity.



Mask 2 is used as upper layer with 100% opacity.

Soft light is not related to "Hard light" in anything but the name, but it does tend to make the edges softer and the colors not so bright. It is similar to "Overlay" mode. In some versions of GIMP, "Overlay" mode and "Soft light" mode are identical.

The equation is complicated. It needs Rs, the result of Screen mode:

Equation 8.10. Equation for layer mode "Screen"

Equation 8.11. Equation for layer mode "Soft light"

Hard light

Figure 8.61. Example for layer mode "Hard light"



Mask 1 is used as upper layer with 100% opacity.



Mask 2 is used as upper layer with 100% opacity.

Hard light mode is rather complicated because the equation consists of two parts, one for darker colors and one for brighter colors. If the pixel color of the upper layer is greater than 128, the layers are combined according to the first formula shown below. Otherwise, the pixel values of the upper and lower layers are multiplied together and multiplied by two, then divided by 256. You might use this mode to combine two photographs and obtain bright colors and sharp edges.

The equation is complex and different according to the value >128 or < 128:

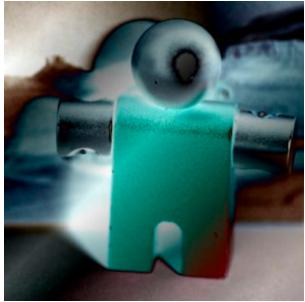
Equation 8.12. Equation for layer mode "Hard light", M > 128

Equation 8.13. Equation for layer mode "Hard light", M < 128

Inversion Layer Modes

Difference

Figure 8.62. Example for layer mode "Difference"



Mask 1 is used as upper layer with 100% opacity.



Mask 2 is used as upper layer with 100% opacity.

Difference mode subtracts the pixel value of the upper layer from that of the lower layer and then takes the absolute value of the result. No matter what the original two layers look like, the result looks rather odd. You can use it to invert elements of an image. The equation is:

Equation 8.14. Equation for layer mode "Difference"

The mode is commutative; the order of the two layers doesn't matter. Subtract

Figure 8.63. Example for layer mode "Subtract"



Mask 1 is used as upper layer with 100% opacity.



Mask 2 is used as upper layer with 100% opacity.

Subtract mode subtracts the pixel values of the upper layer from the pixel values of the lower layer. The resulting image is normally darker. You might get a lot of black or near-black in the resulting image. The equation can result in negative color values, so some of the dark colors may be set to the minimum value of 0. The equation is:

Equation 8.15. Equation for layer mode "Subtraction"

Grain extract

Figure 8.64. Example for layer mode "Grain extract"



Mask 1 is used as upper layer with 100% opacity.



Mask 2 is used as upper layer with 100% opacity.

Grain extract mode is supposed to extract the "film grain" from a layer to produce a new layer that is pure grain, but it can also be useful for giving images an embossed appearance. It subtracts the pixel value of the upper layer from that of the lower layer and adds 128. The equation is:

Equation 8.16. Equation for layer mode "Grain extract"

Grain merge

Figure 8.65. Example for layer mode "Grain merge"



Mask 1 is used as upper layer with 100% opacity.



Mask 2 is used as upper layer with 100% opacity.

Grain merge mode merges a grain layer (possibly one created from the "Grain extract" mode) into the current layer, leaving a grainy version of the original layer. It does just the opposite of "Grain extract". It adds the pixel values of the upper and lower layers together and subtracts 128. The equation is:

Equation 8.17. Equation for layer mode "Grain merge"

Divide

Figure 8.66. Example for layer mode "Divide"



Mask 1 is used as upper layer with 100% opacity.



Mask 2 is used as upper layer with 100% opacity.

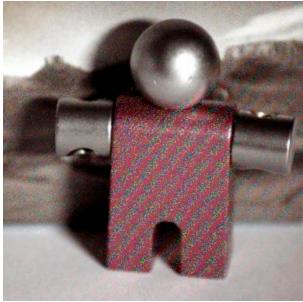
Divide mode multiplies each pixel value in the lower layer by 256 and then divides that by the corresponding pixel value of the upper layer plus one. (Adding one to the denominator avoids dividing by zero.) The resulting image is often lighter, and sometimes looks "burned out". The equation is:

Equation 8.18. Equation for layer mode "Divide"

HSV Components Layer Modes

HSV Hue

Figure 8.67. Example for layer mode "HSV Hue"



Mask 1 is used as upper layer with 100% opacity.



Mask 2 is used as upper layer with 100% opacity.

HSV Hue mode uses the Hue of the upper layer and the Saturation and Value of the lower layer to form the resulting image. However, if the Saturation of the upper layer is zero, the Hue is taken from the lower layer, too. HSV Saturation

Figure 8.68. Example for layer mode "HSV Saturation"



Mask 1 is used as upper layer with 100% opacity.

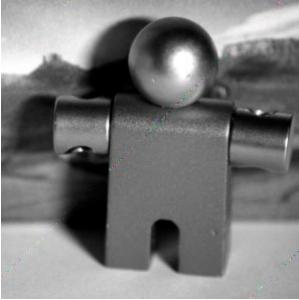


Mask 2 is used as upper layer with 100% opacity.

HSV Saturation mode uses the Saturation of the upper layer and the Hue and Value of the lower layer to form the resulting image.

HSL Color

Figure 8.69. Example for layer mode "HSL Color"



Mask 1 is used as upper layer with 100% opacity.

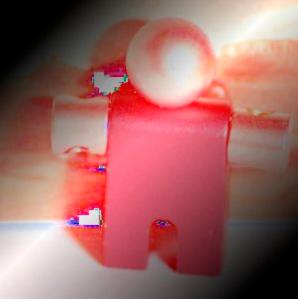


Mask 2 is used as upper layer with 100% opacity.

HSL Color mode uses the Hue and Saturation of the upper layer and the Lightness of the lower layer to form the resulting image.

HSV Value

Figure 8.70. Example for layer mode "HSV Value"



Mask 1 is used as upper layer with 100% opacity.



Mask 2 is used as upper layer with 100% opacity.

HSV Value mode uses the Value of the upper layer and the Saturation and Hue of the lower layer to form the resulting image. You can use this mode to reveal details in dark and light areas of an image without changing the Saturation.

[4] See the old Bugzilla issue tracker: issue #162395.



2.7. LCh Components Layer Modes

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4. Creating New Layers

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4. Creating New Layers



Chapter 8. Combining Images



4. Creating New Layers

There are several ways to create new layers in an image. Here are the most important ones:

- Selecting Layer → New Layer... in the main menu. This brings up a dialog that allows you to set the basic properties of the new layer; see the New Layer dialog section for help with it.
- Selecting Layer → Duplicate Layers in the main menu. This creates a new layer, that is a perfect copy of the currently active layer, just above the active layer.
- When you "cut" or "copy" something, and then paste it using Ctrl + V or Edit → Paste, the result is a "floating selection", which is a sort of temporary layer. Before you can do anything else, you either have to anchor the floating selection to an existing layer, or convert it into a normal layer. If you do the latter, the new layer will be sized just large enough to contain the pasted material.







3. Legacy Layer Modes



5. Layer Groups

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5. Layer Groups

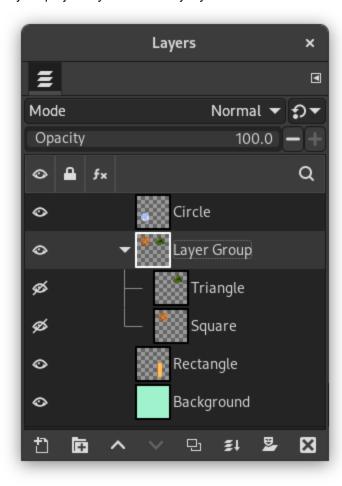


Chapter 8. Combining Images



5. Layer Groups

"Layer Groups" enable you to group layers together in a hierarchical structure. This will make it easier to manage your project if you have many layers.



Create a Layer Group

You can create a layer group by clicking the New Layer Group button at the bottom of the <u>Layers Dialog</u>, by using the menu command Layer \rightarrow New Layer Group, or through the Layers dialog context menu. This new empty layer group appears just above the current layer. It is recommended to give it a descriptive name. To change the layer group name, double-click the name, press $\boxed{\mathbf{F2}}$, or right-click the layer and select **Edit Layer Attributes** from the context menu. If you don't rename your layer groups, you can get confused when several groups have been created with names such as Layer Group #1, Layer Group #2, etc. You can create multiple layer groups and you can **embed** them, that is include a layer group in another one.

Adding Layers to a Layer Group

You can add existing layers to a layer group by click-and-dragging them.



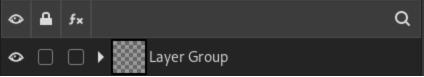
Note

The hand representing the mouse pointer must turn smaller before releasing the mouse button.

A thin horizontal line marks where the layer will be inserted.

To add a *new layer* to the current layer group, click the New <u>Layer...</u> button at the bottom of the Layers dialog, use the New Layer... command in the main menu, or press Shift + Ctrl + N.

When a layer group is not empty, a small icon papears. By clicking it, you can fold or unfold the group.



Layers that belong to a layer group are slightly indented to the right, allowing you to easily see which layers are part of the group.

Visibility

If a layer group is made invisible using the eye icon but still open (so that the layers inside the group are shown in the list), there is a struck out eye shown besides the layers that are inside the group to indicate that these layers are not displayed in the final projection of the image, but theoretically visible in the layer group.



Raise and Lower Layer Groups

You can raise and lower layer groups in the Layers dialog as you do with normal layers: click-and-dragging, and by using up arrow and down arrow keys at the bottom of the Layers dialog.

Duplicate a Layer Group

To duplicate a layer group, click the Create a duplicate of the layer button or right-click and select the **Duplicate Layers** command in the pop up context menu.

Move Layer Groups

You can **move a layer group to another image** by click-and-dragging. You can also copy-paste it using **Ctrl** + **C** and **Ctrl** + **V**: then, you get a floating selection that you must anchor (another button at the bottom of the <u>Layers Dialog</u>).

You can also **move a layer group to the canvas**: this duplicates the group *in* the group. Select the layer group, select the <u>Move tool</u>, then, in the image, move the layer. That's one way to multiply multi-layer objects in an image.

Delete Layer Groups

To delete one or more layer groups, click the icon button on the bottom of the Layers dialog, or drag and drop the selected layer groups on top of that button, or use the <u>Delete Layers</u> command from the main menu or from the Layers dialog context menu.

Embed Layer Groups

When a layer group is activated, you can add another group inside it with the "Add New Layer Group" command. There seems to be no limit, except memory, to the number of embedded layer groups.

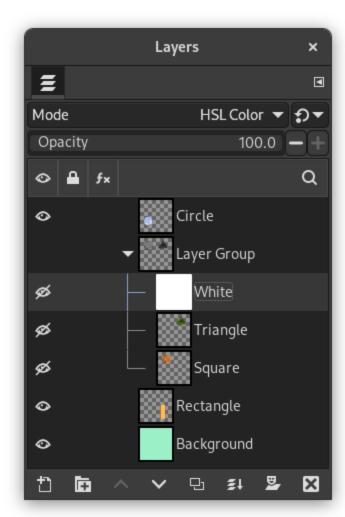
Layer Modes and Groups

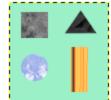
A layer mode applied to a layer group acts on layers that are in this group only. A layer mode above a layer group acts on all layers underneath, outside and inside the layer groups.



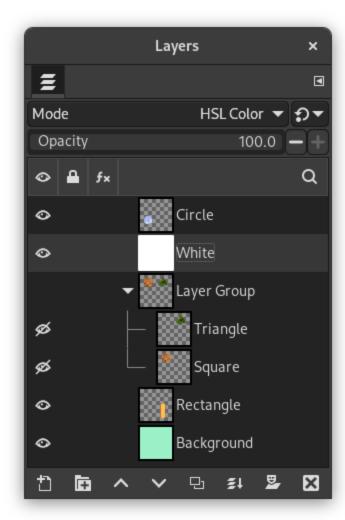
Original image

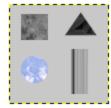
Figure 8.71. Layer Mode in or out Layer Group





We added a white layer in the layer group with HSL Color mode: only the square and triangle turned gray.





We added a white layer *outside* and above the layer group with HSL Color mode: all layers underneath changed to gray, including the background layer.

Layer groups have a special layer mode: the Pass Through mode. This mode exists only if a layer group is active.

When this mode is used instead of any other one, layers inside the layer group will behave as if they were a part of the layer stack, not belonging to the group. Layers within the group blend with layers below, inside and outside the group.

While with Normal mode, layers within a group are treated as if they were a single layer, which is then blended with other layers below in the stack; a modifier on a layer inside the group blends layers below in the group only. More details about Pass Through in Pass-through.

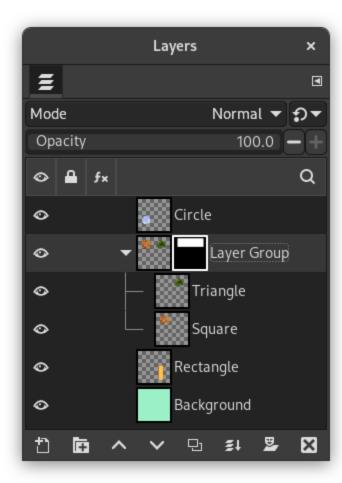
Opacity

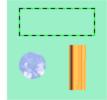
When a layer group is activated, opacity changes are applied to all the layers of the group.

Layer Mask

Masks are also available on layer groups. They work similarly to ordinary <u>layer masks</u>, with the following considerations.

The layer group's mask size is the same as the combined size of all its children at all times. When the group's size changes, the mask is cropped to the new size — areas of the mask that fall outside of the new bounds are discarded, and newly added areas are filled with black (and hence are transparent by default).





We added a black (transparent) layer mask to the layer group, making the layers inside the group transparent (invisible).

Of course, you still can add a layer mask to a layer in the group to mask a part of the layer.

Finding a layer

When working with a lot of layers, finding a particular layer in the list can be difficult. To find the layer to which an image element belongs, use the *on-canvas layer selection* function via Alt + Middle click on the image element. The available layers will be looped through to show the new active layer and the layer name will be temporarily displayed in the status bar.

Layer preview

There have been problems with slow preview rendering of layer groups in case of many layers in a large image. If you are experiencing this, you can disable rendering layer group previews in Edit \rightarrow Preferences \rightarrow Interface.









4. Creating New Layers



Chapter 9. Text Management

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Chapter 9. Text Management



Part II. How do I Become a GIMP Wizard?



Chapter 9. Text Management

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 - 1.3. Text Toolbox
 - 1.4. Text Context Menu
- 2. Text
 - 2.1. Adding Fonts

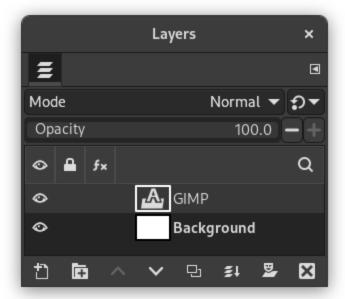
1. Text Management

Text is managed with the Text tool. This tool creates a new layer containing the text, above the current layer in the Layers dialog, with the size of the text box. Its name is the beginning of the text.

Figure 9.1. Example of a text item



Example of a text item, showing the boundary of the text layer. (Font: Utopia Bold)



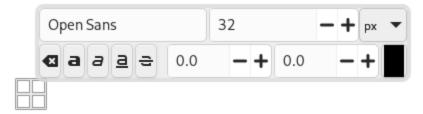
The Layers dialog, with the text layer above the layer which was current.

Text can be edited directly on canvas. A text tool box, which shows up on top of the canvas above the text box, allows you to quickly change some of the text characteristics.



Note

The settings you change in this on canvas dialog only apply to the parts of the text that are selected, or any new text you type after the current cursor position.



As soon as you click on the canvas with the Text tool, you get a closed text box and a semi-transparent tool box just above.

Text tool options are described in <u>Section 5.3, "Text"</u>.

1.1. Text Area

You can start typing text at once. The text box will enlarge gradually. Press **Enter** to add a new line. You can also **enlarge the text box** by click-and-dragging, as you do with selections. The box size appears then in the <u>status bar</u> at the bottom of the image:

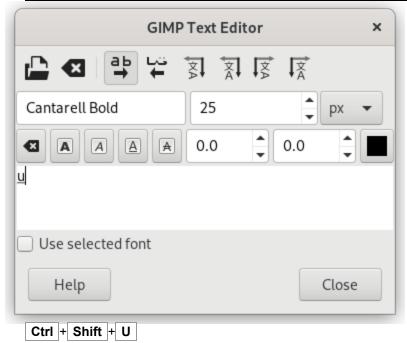


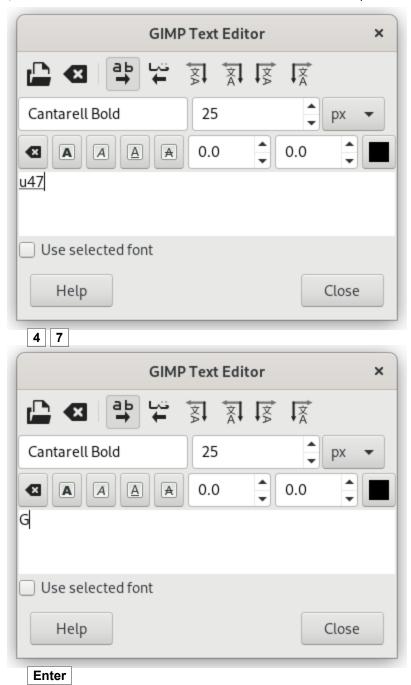
To **edit text**, you must, first, select the part you want to edit by click-and-drag, or Shift + arrow keys and then use the options of the Section 1.3, "Text Toolbox".

Instead of using the on-canvas text editing, you can use the text editor dialog described in <u>Section 5.3.3, "Text Editor"</u>.

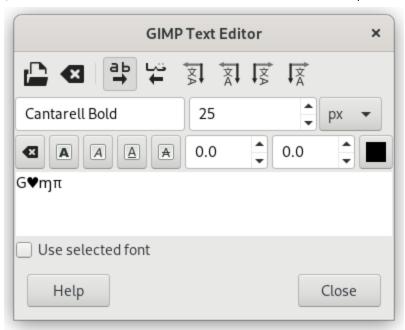
You can **move the text** on the image using the Move tool: you must click on a character, not on the background. You can get Unicode characters with Ctrl + Shift + U plus hexadecimal Unicode code of the desired char, for example:

Figure 9.2. Entering Unicode characters





Of course this feature is more useful for entering special (even exotic) characters, provided that the required glyphs for these characters are supplied by the selected font — only few fonts support Klingon. ;-)



Unicode 0x47 ("G"), 0x2665, 0x0271, 0x03C0

You can **edit the text later**, if the text layer still exists and has not been modified by another tool (see below): make the text layer active in the <u>Layer dialog</u>, select the Text tool and click on the text in the image window.

1.2. Managing Text Layer

You can operate on a text layer in the same ways as any other layer, but doing so often means giving up the ability to edit the text without losing the results of your work.

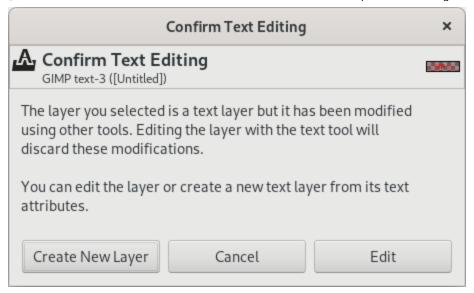
To understand some of the idiosyncrasies of text handling, it may help for you to realize that a text layer contains more information than the pixel data that you see: it also contains a representation of the text in a text-editor format. You can see this in the text-editor window that pops up while you are using the Text tool. Every time you alter the text, the image layer is redrawn to reflect your changes.

Now suppose you create a text layer, and then operate on it in some way that does not involve the Text tool: rotate it, for example. Suppose you then come back and try to edit it using the Text tool. As soon as you edit the text, the Text tool will redraw the layer, wiping out the results of the operations you performed in the meantime.

Because this danger is not obvious, the Text tool tries to protect you from it. If you operate on a text layer, and then later try to edit the text, a message pops up, warning you that your alterations will be undone, and giving you three options:

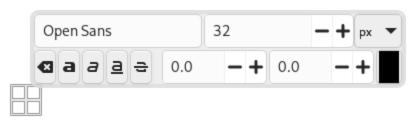
- edit the text anyway;
- cancel:
- create a new text layer with the same text as the existing layer, leaving the existing layer unchanged.

Figure 9.3. Warning lose modifications



1.3. Text Toolbox

Figure 9.4. Text Toolbox

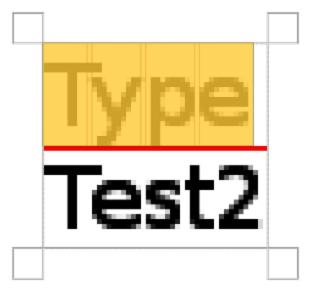


You get this box, which overlays canvas, as soon as you click on canvas with the Text Tool. It allows you to edit text directly on canvas.

Apart from the usual text formatting features like font family, style and size selectors you get numeric control over baseline offset and kerning, as well as the ability to change text color for a selection.

- Change font of selected text: as soon as you start editing the default font name, a drop-down list appears, allowing you to select a font.
- Change size of selected text: self-explanatory.
- Bold, Italic, Underline, Strikethrough : self-explanatory.
- Change baseline of selected text: "In European typography and penmanship, baseline is the line upon which most letters "sit" and below which descenders extend" (Wikipedia). In HTML, there are several kinds of baselines (alphabetic, ideographic, bottom...). Here, consider that baseline is "bottom" and determines the place for descenders. The default baseline "0" gives place for descenders. You can use it to increase space between two lines only, while "Adjust line spacing" in tool options increases space between all lines.

Figure 9.5. Default Baseline



Default baseline marked with a red line.

• Change kerning of selected text: "In typography, kerning... is the process of adjusting the spacing between characters in a proportional font." (Wikipedia). You will probably use this setting to adjust letter spacing of a selected part of text.

Let us look at a selected text (zoomx800 to see pixels):

Figure 9.6. Example of Selected Text





We can see that the Sans font is a proportional font: letters widths are different, and "T" glyph comes over the "e". Letters widths are marked with thin vertical lines and left borders of letter width cover preceding letters by one pixel. Now we set "Change kerning of selected text" to 2 pixels:

Figure 9.7. Example of Text Kerning



Blank spaces, 2 pixels wide, are added between all selected characters and letter widths are preserved. If no text is selected, a blank space is added at the place of the mouse pointer between two characters. Here is a comparison with the Adjust letter spacing option of the <u>Text tool</u>:

Figure 9.8. Example of Text Spacing



The option applies to the whole text, not only to the selected text. Blank spaces are added inside letters widths and letter widths are not respected.

- You can also use | Alt |+ arrow keys | to change baseline offset and kerning.
- Change color of selected text: this command opens a color dialog where you choose a color for the selected text.
- Clear style of selected text: using this command, you can get rid of all new settings you applied to the selected text.

1.4. Text Context Menu

The context menu can be brought up by right-clicking on text. It is somewhat different from that of the Text Editor dialog.

The context menu offers the following options:

- Cut, Copy, Paste, Delete: these commands work with selected text. Except for Paste, they are disabled
 as long as no text is selected. Paste is enabled when the clipboard contains text.
- Open text file...: this command opens a file dialog where you can select a text file. The contents of this file will be opened in the current text layer.
- Clear: this command deletes all the text, selected or not.
- Text to Path: this command creates a path from the outlines of the current text. The result is not evident. You have to open the Paths dialog and make path visible. Then select the Path tool and click on the text. Every letter is now surrounded with a path component. So you can modify the shape of letters by moving path control points.

This command is similar to Layer \rightarrow Text to Path.

Figure 9.9. Text to path applied



Nothing appears.

Figure 9.10. Path made visible



Path made visible in Path tab. Path appears as a red border around text.

Figure 9.11. Path tool activated



Path tool activated; click on path.

Text along path:

This option is enabled only if a <u>path</u> exists. When your text is created, then create or import a path and make it active. If you create your path before the text, the path becomes invisible and you have to make it visible in the Paths dialog.

The Text along path command is also available from the Layer menu in the main menu.

The commands Discard Text Information, Text to Path, and Text along Path only appear in the Layer menu if a text layer is selected.

Select the Text along Path option. The text is wrapped along the path. Letters are represented with their outline. Each of them is a component of the new path that appears in the Paths dialog.



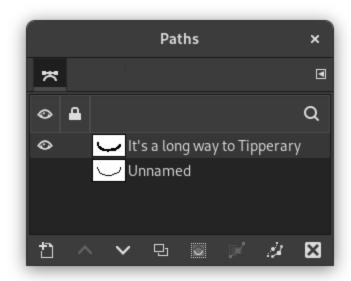
Note

You can change the direction that the text is wrapped around the path by reversing the stroke direction when editing the path with the Path Tool. In the same way you can change at which anchor stroking starts.

Figure 9.12. "Text along Path" example

it's a long way to Tipperary





By converting a text item to a selection or a path, you can fill it, stroke the outlines, transform it, or generally apply the whole panoply of GIMP tools to get interesting effects.

• From left to right, From right to left, Vertical, right to left (mixed orientation), Vertical, right to left (upright orientation), Vertical, left to right (mixed orientation), Vertical, left to right (upright orientation): These commands let you adjust the writing direction of the text.



3/28/25, 9:39 AM 2. Text

2. Text



Chapter 9. Text Management



2. Text

2.1. Adding Fonts

GIMP uses the <u>FreeType 2</u> font engine to render fonts, and a system called Fontconfig to manage them. FreeType 2 supports many common font file formats.

Any font in Fontconfig's font path is available in GIMP. In addition, any font which is located in GIMP's Font Folders is available in GIMP. Font Folders are set on the Fonts page in the Folders preferences.

By default, there are two Font Folders: The system GIMP fonts folder (which you should not alter), and a fonts folder inside your personal GIMP directory. You can also add additional font folders if wanted.

Linux

There are several ways to install a font:

- Use an application like GNOME Fonts or KFontView to install the font.
- Place the font file in the directory ~/.local/share/fonts/. This will make the font available to you only.
- If you have administrator rights, place the font file in the directory /usr/local/share/fonts/. This will make the font available to all users.

In all cases, the font will become available to all programs that use Fontconfig.

Microsoft Windows

There are several ways to install a font system-wide:

- Drag the font file into the Fonts directory C:\Windows\Fonts .
- Install the font via the Settings app. In Windows, go to Settings, select Personalization, then from there go to Fonts.

macOS

Install the font via the Font Book application.

The installed fonts will show up the next time you start GIMP. If you want to use it in an already running GIMP instance, press the *Refresh* C button in the <u>Fonts dialog</u>.



Note

If for some reason you run into problems trying to install a font systemwide, try to install the font in the fonts folder of your personal GIMP directory instead (see above).

2.1.1. Font Problems

In most cases, problems with fonts are caused by malformed font files or outdated font formats. If you experience crashes at start-up when GIMP scans your font directories, as a quick workaround you can start GIMP with the --no-fonts command line argument, but then you will not be able to use the text tool.







Chapter 9. Text Management



Chapter 10. Enhancing Photographs

Chapter 10. Enhancing Photographs



Part II. How do I Become a GIMP Wizard?



Chapter 10. Enhancing Photographs

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1. Working with Digital Camera Photos

1.1. Introduction

One of the most common uses of GIMP is to fix digital camera images that for some reason are less than perfect. Maybe the image is overexposed or underexposed; maybe rotated a bit; maybe out of focus: these are all common problems for which GIMP has good tools. The purpose of this chapter is to give you an overview of those tools and the situations in which they are useful. You will not find detailed tutorials here: in most cases it is easier to learn how to use the tools by experimenting with them than by reading about them. (Also, each tool is described more thoroughly in the Help section devoted to it.) You will also not find anything in this chapter about the multitude of "special effects" that you can apply to an image using GIMP. You should be familiar with basic GIMP concepts before reading this chapter, but you certainly don't need to be an expert—if you are, you probably know most of this anyway. And don't hesitate to experiment: GIMP's powerful "undo" system allows you to recover from almost any mistake with a simple Ctrl + Z.

Most commonly the things that you want to do to clean up an imperfect photo are of four types: improving the composition; improving the colors; improving the sharpness; and removing artifacts or other undesirable elements of the image.

1.2. Improving Composition

1.2.1. Rotating an Image

It is easy, when taking a picture, to hold the camera not quite perfectly vertical, resulting in a picture where things are tilted at an angle. In GIMP, the way to fix this is to use the Rotate tool. Activate this by clicking its icon in the Toolbox, or by pressing the Shift + R while inside the image. Make sure the Tool Options are visible, and at the top, make sure for "Transform:" that the left button ("Transform Layer") is selected. If you then click the mouse inside the image and drag it, you will see the image rotate as you drag. When the image looks right, click Rotate or press Enter , and the image will be rotated.

Now as a matter of fact, it isn't so easy to get things right by this method: you often find that things are better but not quite perfect. One solution is to rotate a bit more, but there is a disadvantage to that approach. Each time you rotate an image, because the rotated pixels don't line up precisely with the original pixels, the image inevitably gets blurred a little bit. For a single rotation, the amount of blurring is quite small, but two rotations cause twice as much blurring as one, and there is no reason to blur things more than you have to. A better alternative is to undo the rotation and then do another, adjusting the angle.

Fortunately, GIMP provides another way of doing it that is considerably easier to use: in the Rotate Tool Options, for the Transform Direction you can select "Corrective (Backward)". When you do this, instead of rotating the image to

compensate for the error, you can rotate its frame to *line up* with the error. If this seems confusing, try it and you will see that it is quite straightforward.

After you have rotated an image, there will be unpleasant triangular "holes" at the corners. One way to fix them is to create a background that fills the holes with some unobtrusive or neutral color, but usually a better solution is to crop the image. The greater the rotation, the more cropping is required, so it is best to get the camera aligned as well as possible when you take the picture in the first place.

1.2.2. Cropping

When you take a picture with a digital camera, you have some control over what gets included in the image but often not as much as you would like: the result is images that could benefit from trimming. Beyond this, it is often possible to enhance the impact of an image by trimming it so that the most important elements are placed at key points. A rule of thumb, not always to be followed but good to keep in mind, is the "rule of thirds", which says that maximum impact is obtained by placing the center of interest one-third of the way across the image, both widthwise and heightwise.

To crop an image, activate the <u>Crop</u> tool in the Toolbox, or by pressing **Shift** + **C** while inside the image. With the tool active, clicking and dragging in the image will sweep out a crop rectangle. When everything is perfect, hit **Enter**. Note: if Delete cropped pixels in Crop Tool Options is disabled, the cropped part will not be removed from the image, only the visible image area will be adjusted.

1.3. Improving Colors

1.3.1. Automated Tools

In spite of sophisticated exposure-control systems, pictures taken with digital cameras often come out over- or under-exposed, or with color casts due to imperfections in lighting. GIMP gives you a variety of tools to correct colors in an image, ranging to automated tools that run with a simple button-click to highly sophisticated tools that give you many parameters of control. We will start with the simplest first.

GIMP gives you several automated color correction tools. Unfortunately they don't usually give you quite the results you are looking for, but they only take a moment to try out, and if nothing else they often give you an idea of some of the possibilities inherent in the image. Except for "Auto Levels", you can find these tools by following the menu path Colors \rightarrow Auto in the main menu.

Here they are, with a few words about each:

Equalize

This is a very powerful adjustment that tries to spread the colors in the image evenly across the range of possible intensities. In some cases the effect is amazing, bringing out contrasts that are very difficult to get in any other way; but more commonly, it just makes the image look weird. Oh well, it only takes a moment to try.

White balance

This may enhance images with poor white or black by removing little used colors and stretch the remaining range as much as possible.

Stretch Contrast

This is useful for underexposed images: it adjusts the whole image until the brightest point is right at the saturation limit, and the darkest point is black. The downside is that the amount of brightening is determined entirely by the lightest and darkest points in the image, so even one single white pixel and/or one single black pixel will make normalization ineffective. It operates on the red, green, and blue channels independently. It often has the useful effect of reducing color casts.

Stretch Contrast HSV

Does the same as Stretch Contrast but works in HSV color space, rather than RGB color space. It preserves the Hue.

Color Enhance

This command increases the saturation range of the colors in the layer, without altering brightness or hue. So this command does not work on grayscale images.

Auto Levels

This is done by selecting Colors → Levels... in the main menu, and then pressing the Auto Input Levels button near the center of the dialog. You will see a preview of the result; you must press Okay for it to take effect. Pressing Cancel instead will cause your image to revert to its previous state.

If you can find a point in the image that ought to be perfect white, and a second point that ought to be perfect black, then you can use the Levels tool to do a semi-automatic adjustment that will often do a good job of fixing

both brightness and colors throughout the image. First, bring up the Levels tool as previously described. Now, look down near the bottom of the Levels dialog for three buttons with symbols on them that look like eyedroppers (at least, that is what they are supposed to look like). The one on the left, if you mouse over it, shows its function to be "Pick Black Point". Click on this, then click on a point in the image that ought to be black—really truly perfectly black, not just sort of dark—and watch the image change. Next, click on the rightmost of the three buttons ("Pick White Point"), and then click a point in the image that ought to be white, and once more watch the image change. If you are happy with the result, click the Okay button otherwise Cancel.

Those are the automated color adjustments: if you find that none of them quite does the job for you, it is time to try one of the interactive color tools. All of these, except one, can be accessed via Colors \rightarrow Auto in the main menu.

1.3.2. Exposure Problems

The simplest tool to use is the <u>Brightness/Contrast</u> tool. It is also the least powerful, but in many cases it does everything you need. This tool is often useful for images that are overexposed or underexposed; it is not useful for correcting color casts. The tool gives you two sliders to adjust, for "Brightness" and "Contrast". If you have the option "Preview" checked (and almost certainly you should), you will see any adjustments you make reflected in the image. When you are happy with the results, press Okay and they will take effect. If you can't get results that you are happy with, press Cancel and the image will revert to its previous state.

A more sophisticated, and only slightly more difficult, way of correcting exposure problems is to use the Levels tool. The dialog for this tool looks very complicated, but for the basic usage we have in mind here, the only part you need to deal with is the "Input Levels" area, specifically the three triangular sliders that appear below the histogram. We refer you to the <u>Levels Tool Help</u> for instructions; but actually the easiest way to learn how to use it is to experiment by moving the three sliders around, and watching how the image is affected. (Make sure that "Preview" is checked at the bottom of the dialog.)

A very powerful way of correcting exposure problems is to use the *Curves* tool. This tool allows you to click and drag control points on a curve, in order to create a function mapping input brightness levels to output brightness levels. The Curves tool can replicate any effect you can achieve with Brightness/Contrast or the Levels tool, so it is more powerful than either of them. Once again, we refer you to the <u>Curves Tool Help</u> for detailed instructions, but the easiest way to learn how to use it is by experimenting.

The most powerful approach to adjusting brightness and contrast across an image, for more expert GIMP users, is to create a new layer above the one you are working on, and then in the Layers dialog set the Mode for the upper layer to "Multiply". The new layer then serves as a "gain control" layer for the layer below it, with white yielding maximum gain and black yielding a gain of zero. Thus, by painting on the new layer, you can selectively adjust the gain for each area of the image, giving you very fine control. You should try to paint only with smooth gradients, because sudden changes in gain will give rise to spurious edges in the result. Paint only using shades of gray, not colors, unless you want to produce color shifts in the image.

Actually, "Multiply" is not the only mode that is useful for gain control. In fact, "Multiply" mode can only darken parts of an image, never lighten them, so it is only useful where some parts of an image are overexposed. Using "Divide" mode has the opposite effect: it can brighten areas of an image but not darken them. Here is a trick that is often useful for bringing out the maximum amount of detail across all areas of an image:

- 1. Duplicate the layer (producing a new layer above it).
- 2. Desaturate the new layer.
- 3. Apply a Gaussian blur to the result, with a large radius (100 or more).
- 4. Set Mode in the Layers dialog to Divide.
- 5. Control the amount of correction by adjusting opacity in the Layers dialog, or by using Brightness/Contrast, Levels, or Curves tools on the new layer.
- 6. When you are happy with the result, you can use Merge Down to combine the control layer and the original layer into a single layer.

In addition to "Multiply" and "Divide", you may every so often get useful effects with other layer combination modes, such as "Dodge", "Burn", or "Soft Light". It is all too easy, though, once you start playing with these things, to look away from the computer for a moment and suddenly find that you have just spent an hour twiddling parameters. Be warned: the more options you have, the harder it is to make a decision.

1.3.3. Adjusting Hue and Saturation

In our experience, if your image has a color cast—too much red, too much blue, etc—the easiest way to correct it is to use the Levels tool, adjusting levels individually on the red, green, and blue channels. If this doesn't work for you, it might be worth your while to try the Color Balance tool or the Curves tool, but these are much more difficult to use effectively. (They are very good for creating certain types of special effects, though.)

Sometimes it is hard to tell whether you have adjusted colors adequately. A good, objective technique is to find a point in the image that you know should be either white or a shade of gray. Activate the Color Picker tool (the eyedropper symbol in the Toolbox), and Shift—click on the aforesaid point: this brings up the Color Picker dialog. If the colors are correctly adjusted, then the red, green, and blue components of the reported color should all be equal; if not, then you should see what sort of adjustment you need to make. This technique, when well used, allows even color-blind people to color-correct an image.

If your image is washed out—which can easily happen when you take pictures in bright light—try the <u>Hue/Saturation</u> tool, which gives you three sliders to manipulate, for Hue, Lightness, and Saturation. Raising the saturation will probably make the image look better. In some cases it is useful to adjust the lightness at the same time. ("Lightness" here is similar to "Brightness" in the Brightness/Contrast tool, except that they are formed from different combinations of the red, green, and blue channels.) The Hue/Saturation tool gives you the option of adjusting restricted subranges of colors (using the buttons at the top of the dialog), but if you want to get natural-looking colors, in most cases you should avoid doing this.



Tip

Even if an image does not seemed washed out, often you can increase its impact by pushing up the saturation a bit. Veterans of the film era sometimes call this trick "Fujifying", after Fujichrome film, which is notorious for producing highly saturated prints.

When you take pictures in low light conditions, in some cases you have the opposite problem: too much saturation. In this case too the Hue/Saturation tool is a good one to use, only by reducing the saturation instead of increasing it.

1.4. Adjusting Sharpness

1.4.1. Unblurring

If the focus on the camera is not set perfectly, or the camera is moving when the picture is taken, the result is a blurred image. If there is a lot of blurring, you probably won't be able to do much about it with any technique, but if there is only a moderate amount, you should be able to improve the image.

The most generally useful technique for sharpening a fuzzy image is called the <u>Sharpen (Unsharp Mask)</u>. In spite of the rather confusing name, which derives from its origins as a technique used by film developers, its result is to make the image sharper, not "unsharp". It is a plug-in, and you can access it via Filters → Enhance → Sharpen (Unsharp Mask)… in the main menu. There are two parameters, "Radius" and "Amount". The default values often work pretty well, so you should try them first. Increasing either the radius or the amount increases the strength of the effect. Don't get carried away, though: if you make the unsharp mask too strong, it will amplify noise in the image and also give rise to visible artifacts where there are sharp edges.



Tip

Sometimes using Sharpen (Unsharp Mask) can cause color distortion where there are strong contrasts in an image. When this happens, you can often get better results by decomposing the image into separate Hue-Saturation-Value (HSV) layers, and running Sharpen (Unsharp Mask) on the Value layer only, then recomposing. This works because the human eye has much finer resolution for brightness than for color. See the sections on Decompose and Compose for more information.

In some situations, you may be able to get useful results by selectively sharpening specific parts of an image using the <u>Blur/Sharpen</u> tool from the Toolbox, in "Sharpen" mode. This allows you to increase the sharpness in areas by painting over them with any paintbrush. You should be restrained about this, though, or the results will not look very natural: sharpening increases the apparent sharpness of edges in the image, but also amplifies noise.

1.4.2. Reducing Graininess

When you take pictures in low-light conditions or with a very fast exposure time, the camera does not get enough data to make good estimates of the true color at each pixel, and consequently the resulting image looks grainy. You can "smooth out" the graininess by blurring the image, but then you will also lose sharpness. There are a couple of approaches that may give better results. Probably the best, if the graininess is not too bad, is to use the filter called Selective Gaussian Blur, setting the blurring radius to 1 or 2 pixels. The other approach is to use the Despeckle filter. This has a nice preview, so you can play with the settings and try to find some that give good results. When graininess is really bad, though, it is often very difficult to fix by anything except heroic measures (i.e., retouching with paint tools).

1.4.3. Softening

Every so often you have the opposite problem: an image is *too* crisp. The solution is to blur it a bit: fortunately blurring an image is much easier than sharpening it. Since you probably don't want to blur it very much, the simplest method is to use one of the "Blur" filters, accessed via Filters \rightarrow Blur from the main menu. This will soften the focus of the image a little bit. If you want more softening, just repeat until you get the result you desire.

1.5. Removing Unwanted Objects from an Image

There are two kinds of objects you might want to remove from an image: first, artifacts caused by junk such as dust or hair on the lens; second, things that were really present but impair the quality of the image, such as a telephone wire running across the edge of a beautiful mountain landscape.

1.5.1. Despeckling

A good tool for removing dust and other types of lens grunge is the <u>Despeckle</u> filter, accessed via Filters → Enhance → Despeckle... from the main menu. Very important: to use this filter effectively, you must begin by making a small selection containing the artifact and a small area around it. The selection must be small enough so that the artifact pixels are statistically distinguishable from the other pixels inside the selection. If you try to run despeckle on the whole image, you will hardly ever get anything useful. Once you have created a reasonable selection, activate Despeckle, and watch the preview as you adjust the parameters. If you are lucky, you will be able to find a setting that removes the junk while minimally affecting the area around it. The more the junk stands out from the area around it, the better your results are likely to be. If it isn't working for you, it might be worthwhile to cancel the filter, create a different selection, and then try again.

If you have more than one artifact in the image, it is necessary to use Despeckle on each individually.

1.5.2. Garbage Removal

The most useful method for removing unwanted "clutter" from an image is the <u>Clone</u> tool, which allows you to paint over one part of an image using pixel data taken from another part (or even from a different image). The trick to using the clone tool effectively is to be able to find a different part of the image that can be used to "copy over" the unwanted part: if the area surrounding the unwanted object is very different from the rest of the image, you won't have much luck. For example, if you have a lovely beach scene, with a nasty human walking across the beach who you would like to teleport away, you will probably be able to find an empty part of the beach that looks similar to the part he is walking across, and use it to clone over him. It is quite astonishing how natural the results can look when this technique works well.

Consult the <u>Clone Tool Help</u> for more detailed instructions. Cloning is as much an art as a science, and the more you practice at it, the better you will get. At first it may seem impossible to produce anything except ugly blotches, but persistence will pay off.

Another tool looking very much as the clone tool, but smarter, is the healing tool which also takes the area around the destination into account when cloning. A typical usage is removal of wrinkles and other minor errors in images. In some cases you may be able to get good results by simply cutting out the offending object from the image, and then using a plug-in called "Resynthesizer" to fill in the void. This plug-in is not included with the main GIMP distribution, but it can be obtained from the author's web site <a href=[PLUGIN-RESYNTH]. As with many things, your mileage may vary.

1.5.3. Removing Red-eye

When you take a flash picture of somebody who is looking directly toward the camera, the iris of the eye can bounce the light of the flash back toward the camera in such a way as to make the eye appear bright red: this effect is called "red eye", and looks very bizarre. Many modern cameras have special flash modes that minimize red-eye, but they only work if you use them, and even then they don't always work perfectly. Interestingly, the same effect occurs with animals, but the eyes may show up as other colors, such as green.

GIMP provides a special <u>remove red eye</u> filter. Make a selection with one of the selection tools of the red part of the eye and then choose the "Red Eye Removal" filter. You may have to fiddle around a bit with the threshold slider to get the right color.

1.6. Saving Your Results

1.6.1. Files

What file format should you use to save the results of your work, and should you resize it? The answers depend on what you intend to use the image for.

- If you intend to open the image in GIMP again for further work, you should save it in GIMP's native XCF format (i. e., name it something.xcf), because this is the only format that guarantees that none of the information in the image is lost.
- If you intend to print the image on paper, you should avoid shrinking the image, except by cropping it. The reason is that printers are capable of achieving much higher resolutions than video monitors 600 to 1400 dpi ("dots per inch", the physical density) for typical printers, as compared to 72 to 100 pixels per inch for monitors. A 3000×5000-pixel image looks huge on a monitor, but it only comes to about 5 inches by 8 inches on paper at 600 ppi. There is usually no good reason to *expand* the image either: you can't increase the true resolution that way, and it can always be scaled up at the time it is printed. As for the file format, it will usually be fine to use JPEG at a quality level of 75 to 85. In rare cases, where there are large swaths of nearly uniform color, you may need to set the quality level even higher or use a lossless format such as TIFF instead.
- If you intend to display the image on screen or project it with a video projector, bear in mind the highest screen resolutions for most commonly available systems. There is nothing to gain by keeping the image much larger than these resolutions. For this purpose, the JPEG format is almost always a good choice.
- If you want to put the image on a web page or send it by email, it is a good idea to make every effort to keep the file size as small as possible. First, scale the image down to the smallest size that makes it possible to see the relevant details (bear in mind that other people may be using different sized monitors and/or different monitor resolution settings). Second, export the image as a JPEG file. In the JPEG export dialog, check the option to "Preview in image window", and then adjust the Quality slider to the lowest level that gives you acceptable image quality. (You will see in the image the effects of each change.) Make sure that the image is zoomed at 1:1 while you do this, so you are not misled by the effects of zooming.

See the File Formats section for more information.

1.6.2. Printing Your Photos

You print photos from the main menu through File \rightarrow Print.... However it is very useful to keep in mind some elementary concepts to prevent some unpleasant surprises when looking at the result, or to fix them if they occur. You must always remember:

- that image displayed on the screen is in RGB mode and printing will be in CMYK mode; consequently color feature you'll get on printed sheet will not be exactly what you was waiting for. That depends on the used corresponding chart. For the curious ones some adding explanations can be got through a click on these useful Wikipedia links:
 - ICC-Profile [WKPD-ICC]
 - CMYK [WKPD-CMYK]
 - Gamut [WKPD-GAMUT]
- that a screen resolution is roughly within a range from 75 up to 100 dpi; a printer resolution is about 10x higher (or more) than a screen one; printed image size depends on available pixels and resolution; so actual printed size doesn't correspond inevitably to what is displayed on screen nor available sheet size.

Consequently, before any printing, go to Image → Print Size... and choose a convenient output size in the "Print Size" box adjusting either sizes or resolution. The \$\mathbf{T}\$ symbol shows that the both values are linked. You can dissociate x and y resolution by clicking on that symbol, but it is risky. Only some printers support different X vs. Y resolutions.

Last recommendation: think of checking your margins as well as centering. It would be a pity if a too large margin cuts off some part of your image or if an inappropriate centering damages your work especially if you use a special photo paper.

1.6.3. EXIF Data

Digital cameras, when you take a picture, add information to your image about the camera settings and the circumstances under which the picture was taken. This so-called metadata is included in most image files in a structured format called EXIF.

GIMP stores all metadata it can handle when loading an image. When exporting your image, you can select which types of metadata you want included. Not all file formats support all types of metadata. For JPEG files, EXIF metadata will be included if enabled in the export dialog. Besides values that directly depend on changes you made to your image (e.g. dimensions) most values will be saved unchanged from when the image was loaded. You can view the contents of the EXIF, XMP and IPTC metadata, by using the metadata-viewer plug-in. You can access it via Image \rightarrow Metadata \rightarrow View Metadata from the main menu.







2. Text



Chapter 11. Color Management with GIMP

Chapter 11. Color Management with GIMP



Part II. How do I Become a GIMP Wizard?



Chapter 11. Color Management with GIMP

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- 1. Color Management in GIMP
 - 1.1. Problems of a non Color Managed Workflow
 - 1.2. Introduction to a Color Managed Workflow

1. Color Management in GIMP

Many devices you use in your design or photography workflow, like digital photo cameras, scanners, displays, printers etc., have their own color reproduction characteristics. If those are not taken into account during opening, editing and saving, harmful adjustments can be done to images. With GIMP you can have reliable output for both Web and print.

Figure 11.1. Image Processing Workflow







non-calibrated screen







Workflow without Color management



Process with Color management

1.1. Problems of a non Color Managed Workflow

The basic problem of image manipulation without color management is that you do simply not see what you do. This affects two different areas:

- 1. There are differences in Colors caused by different color characteristics of different devices like cameras, scanners, displays or printers
- 2. There are differences in Colors caused by the limitations of the colorspace a specific device is able to handle

The main purpose of color management is to avoid such problems. The approach taken to do so involves the addition of a description of the color characteristic to an image or devices.

These descriptions are called *color profile*. A color profile is basically a look-up table to translate the specific color characteristic of a device to a device-independent color space - the so called working-space. All the image manipulation is then done to images in the working-space. In addition to that the color profile of a device can be used to simulate how colors would look on that device.

The creation of color profiles is most often done by the manufacturer of the devices themselves. To make these profiles usable independent of platform and operating system, the ICC (International Color Consortium) created a standard called ICC-profile that describes how color profiles are stored to files and embedded into images.

1.2. Introduction to a Color Managed Workflow



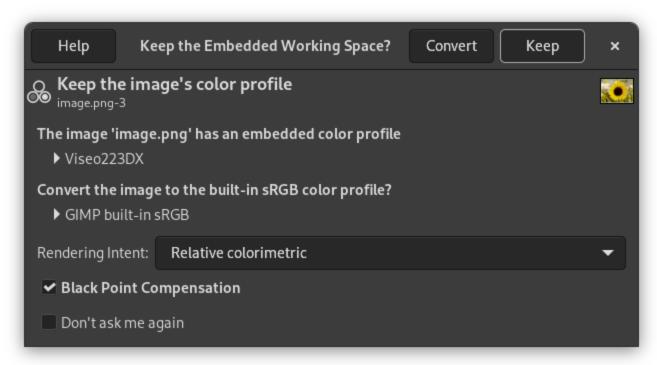
Tip

Most of the parameters and profiles described here can be set in the GIMP preferences. Please see <u>Section 6.4, "Color Management"</u> for details.

1.2.1. Input

Most digital cameras embed a color profile to individual photo files without user interaction. Digital scanners usually come with a color profile, which they also attach to the scanned images.

Figure 11.2. Applying the ICC-profile



When opening an image with an embedded color profile, GIMP offers to convert the file to the RGB working color space. This is sRGB by default and it is recommended that all work is done in that color space. Should you however decide to keep the embedded color profile, the image will however still be displayed correctly. In case for some reason a color profile is not embedded in the image and you know (or have a good guess) which one it should be, you can manually assign it to that image.

1.2.2. Display

For the best results, you need a color profile for your monitor. If a monitor profile is configured, either system-wide or in the Color Management section of the GIMP Preferences dialog, the image colors will be displayed most accurately.

One of the most important GIMP commands to work with color management is described in <u>Section 5.12, "Display Filters"</u>.

If you do not have a color profile for your monitor, you can create it using hardware calibration and measurement tools. On UNIX systems you will need Argyll Color Management System™ [ARGYLLCMS] and/or LProf™ [LPROF] to create color profiles.

1.2.2.1. Display Calibration and Profiling

For displays there are two steps involved. One is called calibration and the other is called profiling. Also, calibration generally involves two steps. The first involves adjusting external monitor controls such as Contrast, Brightness, Color Temperature, etc, and it is highly dependent on the specific monitor. In addition there are further adjustments that are loaded into the video card memory to bring the monitor as close to a standard state as possible. This information is stored in the monitor profile in the so-called vcgt tag. Probably under Windows XP or Mac OS, the operating system loads this information (LUT) in the video card in the process of starting your computer. Under Linux, at present you have to use an external program such as xcalib or dispwin. (If one just does a simple visual calibration using a web site such as that of Norman Koren, one might only use xgamma to load a gamma value.) The second step, profiling, derives a set of rules which allow GIMP to translate RGB values in the image file into appropriate colors on the screen. This is also stored in the monitor profile. It doesn't change the RGB values in the image, but it does change which values are sent to the video card (which already contains the vcgt LUT).

1.2.3. Print Simulation

Using GIMP, you can easily get a preview of what your image will look like on paper. Given a color profile for your printer, the display can be switched into Soft Proof mode. In such a simulated printout, colors that cannot be reproduced will optionally be marked with neutral gray color, allowing you to correct such mistakes before sending your images to the printer.



Chapter 10. Enhancing Photographs





Chapter 12. Enrich my GIMP

Chapter 12. Enrich my GIMP



Part II. How do I Become a GIMP Wizard?



Chapter 12. Enrich my GIMP

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 - 1.1. The Image Grid
 - 1.2. Guides
- 2. Creating Shortcuts to Menu Commands
- 3. Customize Splash-Screen

1. Grids and Guides

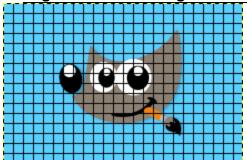
You will probably have it happen many times that you need to place something in an image very precisely, and find that it is not easy to do using a mouse. Often you can get better results by using the arrow keys on the keyboard (which move the affected object one pixel at a time, or 25 pixels if you hold down the **Shift** key), but GIMP also provides you with two other aids to make positioning easier: grids and guides.

Figure 12.1. Image used for examples below



1.1. The Image Grid

Figure 12.2. Image with default grid

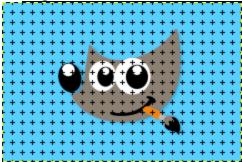


Each image has a grid. It is always present, but by default it is not visible until you activate it by toggling View \rightarrow Show Grid in the main menu. If you want grids to be present more often than not, you can change the default

behavior by checking Show grid in the <u>Image Windows Appearance</u> page of the Preferences dialog. (Note that there are separate settings for Normal Mode and Fullscreen Mode.)

The default grid appearance, set up when you install GIMP, consists of solid lines, spaced every 10 pixels both vertically and horizontally. You can customize the default grid using the <u>Default Image Grid</u> page of the Preferences dialog. If you only want to change the grid appearance for the current image, you can do so by choosing Image \rightarrow Configure Grid... from the main menu: this brings up the <u>Configure Grid</u> dialog.

Figure 12.3. A different grid style



Not only can a grid be helpful for judging distances and spatial relationships, it can also permit you to align things exactly with the grid, if you toggle $View \rightarrow Snap$ to Grid in the main menu: this causes the pointer to "warp" perfectly to any grid line located within a certain distance. You can customize the snap distance threshold by setting "Snap distance" in the <u>Snapping Behavior</u> page of the Preferences dialog, but most people seem to be happy with the default value of 8 pixels. (Note that it is perfectly possible to snap to the grid even if the grid is not visible.)

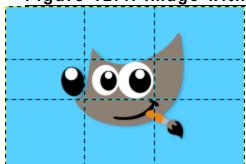


Note

To create a grid that is actually part of the image, use the Grid plug-in.

1.2. Guides

Figure 12.4. Image with four guides



In addition to the image grid, GIMP also gives you a more flexible type of positioning aid: *guides*. These are horizontal or vertical lines you can temporarily display on an image while you are working on it. To create a guide, simply click on one of the rulers in the image window and pull out a guide, while holding the mouse Left Button pressed. The guide is then displayed as a blue, dashed line, which follows the pointer. As soon as you create a guide, the "Move" tool is activated and the mouse pointer changes to the Move icon. You can also create a guide with the New Guide (by Percent) command, or the New Guides from Selection command.

You can create as many guides as you like, positioned wherever you like. To *move a guide* after you have created it, activate the Move tool in the Toolbox (or press the Move), you can then click and drag a guide; click-and-drag the intersection of two guides to move them together. To *delete a guide*, simply drag it outside the image. Holding down the Shift key, you can move everything but a guide, using the guides as an effective alignment aid. The behavior of the guides depends upon the Move (Affect) mode of the "Move" tool. When *Layer* mode is selected, the mouse pointer turns into a small hand as soon as it gets close to a guide. Then the guide is activated and it turns red, and you can move the guide or delete it by moving it back into the ruler. If *Selection* mode is selected, you can position a guide, but you cannot move it after that.

As with the grid, you can cause the pointer to snap to nearby guides, by toggling View \rightarrow Snap to Guides in the main menu. If you have a number of guides and they are making it difficult for you to judge the image properly, you

can hide them by toggling View \rightarrow Show Guides. It is suggested that you only do this momentarily, otherwise you may get confused the next time you try to create a guide and don't see anything happening. If it makes things easier for you, you can change the default behavior for guides in the Image Windows Appearance page of the Preferences dialog. Disabling Show guides is probably a bad idea, though, for the reason just given. You can remove the guides with the Image \rightarrow Guides \rightarrow Remove all Guides command.



Note

Another use for guides: the <u>Slice Using Guides</u> plug-in can use guides to slice an image into a set of sub-images.







Chapter 11. Color Management with GIMP



2. Creating Shortcuts to Menu Commands



2. Creating Shortcuts to Menu Commands





2. Creating Shortcuts to Menu Commands

Many functions which are accessible via the main menu have a default keyboard shortcut. You may want to create a new shortcut for a command that you use a lot and doesn't have one or, more rarely, edit an existing shortcut.

Procedure 12.1. Using the Keyboard Shortcut Dialog

• The <u>Keyboard Shortcuts Dialog</u> can be used to assign keyboard shortcuts. Not only for menu commands, but also for any other command.







Chapter 12. Enrich my GIMP



3. Customize Splash-Screen



3. Customize Splash-Screen

Chapter 12. Enrich my GIMP



3. Customize Splash-Screen

When you start GIMP, you see the *splash-screen* displaying short status messages while the program is loading all its components.

You can customize the splash-screen:

- 1. Create a splashes directory inside your personal GIMP configuration folder.
- 2. Copy your image(s) into this splashes directory.

On start, GIMP will read this directory and choose one of the images at random.



Tip

Make sure that your images aren't too small.







2. Creating Shortcuts to Menu Commands



Chapter 13. Scripting and writing plug-ins

Chapter 13. Scripting and writing plug-ins



Part II. How do I Become a GIMP Wizard?



Chapter 13. Scripting and writing plug-ins

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4.1. The basic elements of a plug-in for GIMP

1. Plug-Ins

1.1. Introduction

One of the nicest things about GIMP is how easily its functionality can be extended, by using plug-ins. GIMP plug-ins are external programs that run under the control of the main GIMP application and interact with it very closely. Plug-ins can manipulate images in almost any way that users can. Their advantage is that it is much easier to add a capability to GIMP by writing a small plug-in than by modifying the huge mass of complex code that makes up the GIMP core. Many valuable plug-ins have C source code that only comes to 100-200 lines or so.

Several dozen plug-ins are included in the main GIMP distribution, and installed automatically along with GIMP. Most of them can be accessed through the Filters menu (in fact, everything in that menu is a plug-in), but a number are located in other menus. In many cases you can use one without ever realizing that it is a plug-in: for example, the "Normalize" function for automatic color correction is actually a plug-in, although there is nothing about the way it works that would tell you this. Even importing and exporting of images is done by plug-ins.

Everyone can write a GIMP plug-in and make it available online. There are many useful plug-ins that can be obtained this way. Some of them are described elsewhere in the User's Manual.

With this free availability comes a certain degree of risk. The fact that anyone can release plug-ins means that there is no effective quality control. The plug-ins distributed with GIMP have all been tested and tuned by the developers. Additional plug-ins available online, may have been hacked together in a few hours and then abandoned. Some plug-in creators don't care about robustness, and even for those who do, their ability to test on a variety of systems in a variety of situations is often quite limited. Basically, when you download a plug-in, you are getting something for

free, and sometimes you get exactly what you pay for. This is not to discourage you, just to make sure you understand that not all plug-ins available online will deliver what you expect from them.



Warning

Plug-ins, being full-fledged executable programs, can do all of the things that any other program can do. This includes installing back-doors on your system or otherwise compromise its security. Don't install a plug-in unless it comes from a trusted source.



Note

GIMP 3.0 needed to change its plug-in API in many places. Because of that, plug-ins written for older versions need to be updated and won't work without changes.

1.2. Using Plug-Ins

For the most part you can use a plug-in like any other GIMP tool, without needing to be aware that it is a plug-in. But there are a few things about plug-ins that are useful to understand.

One is that plug-ins are generally not as robust as the GIMP core. When GIMP crashes, it is considered a very serious thing: it can cost the user a lot of trouble and headache. When a plug-in crashes, the consequences are usually not as serious. In most cases you can continue working without worrying about it too much.



Note

Because plug-ins are separate programs, they communicate with GIMP in a special way: The GIMP developers call it "talking over a wire". When a plug-in crashes, the communication breaks down, and you may see an error message about a "wire read error".



Tip

When a plug-in crashes, GIMP gives you a very ominous-looking message telling you that the plug-in may have left GIMP in a corrupted state, and you should consider saving your images and exiting. Strictly speaking, this is quite correct, because plug-ins have the power to alter almost anything in GIMP, but for practical purposes, experience has shown that corruption is actually quite rare, and many users just continue working and don't worry about it. Our advice is that you simply think about how much trouble it would cause you if something went wrong, and weigh it against the odds.

Because of the way plug-ins communicate with GIMP, they do not have any mechanism for being informed about changes you make to an image after the plug-in has been started. If you start a plug-in, and then alter the image using some other tool, the plug-in may crash. Even if it doesn't, doing this may cause incorrect results. You should avoid running more than one plug-in at a time on an image, and avoid doing anything to the image until the plug-in has finished working on it. If you ignore this advice, not only could you screw up the image, you may also screw up the undo system, so that you won't be able to recover from your mistake.

1.3. Installing New Plug-Ins

The plug-ins that are distributed with GIMP don't require installation. Plug-ins that you download yourself do. Usually the default location is in GIMP's user directory in a folder under <code>/plug-ins</code>, where the folder name needs to be the same as the plug-in filename. You can find the default locations where GIMP searches for plug-ins in the Data Folders preferences. There you can also add new locations where GIMP should look for plug-ins. There are several scenarios, depending on what OS you are using and how the plug-in is structured.

1.3.1. Linux / Unix-like systems

Most plug-ins fall into two categories: small ones whose source code is distributed as a single .c file, and larger ones whose source code is distributed as a directory containing multiple files including a Makefile. For a simple one-file plug-in, call it borker.c, installing it is just a matter of running the command **gimptool-3.0 -- install borker.c**. This command compiles the plug-in and installs it in your personal plug-in directory, ~/gimp-3.0/plug-ins unless you have changed it. This will cause it to be loaded automatically the next time you start GIMP. You don't need to be root to do these things; in fact, you shouldn't be. If the plug-in fails to compile, well, be creative.

1.3.2. Windows

Most GIMP plug-ins available on Windows supply either an installer, or can be downloaded in a pre-compiled binary format ready to copy to a folder of your choice that is recognized by GIMP.

If an installer is available, that should do all the work for you selecting an appropriate folder and copying all relevant files. If not, you may have to check in GIMP's folder preferences where the plug-ins should be copied to. Remember, each plug-in needs to be in its own folder with the same name as the plug-in.

1.3.3. Apple Mac OS X

How you install plug-ins on OS X mostly depends on how you installed GIMP itself. If you were one of the brave and installed GIMP through one of the package managers like fink [FINK] or darwinports [DARWINPORTS], the plug-in installation works exactly the way it is described for the Linux platform already. The only difference is, that a couple of plug-ins might be even available in the repository of your package manager, so give it a try. If, on the other hand, you prefer to grab a prebuilt GIMP package like GIMP.app, you most likely want to a prebuilt plug-in too. You can try to get a prebuilt version of the plug-in of your dreams from the author of the plug-in. Building your own binaries unfortunately involves installing GIMP.

1.3.4. Running the installed plug-in

Once you have installed the plug-in, how do you activate it? The menu path is determined by the plug-in itself, so to answer this you need to either look at the documentation for the plug-in (if there is any), explore the menus, or use GIMP's command search function by pressing \boxed{I} and then entering the name of the plug-in. If you know how to read source code you could also check that to see in what menu it registers itself.

For more complex plug-ins, organized as a directory with multiple files, there usually is a file inside called either INSTALL or README, with instructions. If not, the best advice is to toss the plug-in in the trash and spend your time on something else: any code written with so little concern for the user is likely to be frustrating in myriad ways. If you install a plug-in in your personal plug-in directory that has the same name as one in the system plug-in directory, only one can be loaded, and it will be the one in your home directory. You will receive messages telling you this each time you start GIMP. This is probably a situation best avoided.

1.4. Writing Plug-ins

If you want to learn how to write a plug-in, you can find plenty of help at the GIMP Developers web site [GIMP-DEV-PLUGIN]. GIMP is a complex program, but the development team has made strenuous efforts to flatten the learning curve for plug-in writing: there are good instructions and examples, and the main library that plug-ins use to interface with GIMP (called "libgimp") has a well-documented API. Good programmers, learning by modifying existing plug-ins, are often able to accomplish interesting things after just a couple of days of work.







3. Customize Splash-Screen



2. Using Script-Fu Scripts

2. Using Script-Fu Scripts



Chapter 13. Scripting and writing plug-ins



2. Using Script-Fu Scripts

2.1. Script-Fu?

Script-Fu scripts are similar to very powerful "macros" that you may be familiar with from other programs. Script-Fu is based on an interpreted language called Scheme, and works by using functions that interact with GIMP's internal functions. You can do all kinds of things with Script-Fu, but an ordinary GIMP user will probably use it for automating things that:

- You want to do frequently.
- Are really complicated to do, and hard to remember.

Remember that you can do a whole lot with Script-Fu. The scripts that come with GIMP can be quite useful, but they can also serve as models for learning Script-Fu, or at least as a framework and source of modification when you make your own script. Read the Script-Fu Tutorial in the next section if you want to learn more about how to write your own scripts.

We will describe some of the most useful scripts in this chapter, but we won't cover them all. There are simply too many scripts. Some of the scripts are also very simple and you will probably not need any documentation to be able to use them.







Chapter 13. Scripting and writing plug-ins



2.2. Installing Script-Fu scripts

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2.2. Installing Script-Fu scripts

2. Using Script-Fu Scripts



2.2. Installing Script-Fu scripts

One of the great things about Script-Fu is that you can share your script with all your GIMP friends. There are many scripts that come with GIMP by default, but there are even more available for download online.

- If you have downloaded a script, copy or move it to one of GIMP's Scripts folders. The location of these folders
 can be found in <u>Preferences</u>: Folders → Scripts. You can even add a new scripts folder there if that is more
 convenient for you.
- 2. To be able to use the new script you have to restart GIMP if you had it open while adding the script. The script will appear in one of GIMP's menus. If you can't find it, look for it under the Filters menu, or use the <u>command search</u> using I. If it doesn't appear at all, something was wrong with the script (e.g. it contains syntax errors).







2. Using Script-Fu Scripts



2.3. Do's and Don'ts

3/28/25, 9:41 AM 2.3. Do's and Don'ts

2.3. Do's and Don'ts



2. Using Script-Fu Scripts



2.3. Do's and Don'ts

A common error when you are dealing with Script-Fus is that you simply bring them up and press the OK button. When nothing happens, you probably think that the script is broken or buggy, but there is most likely nothing wrong with it. A simple way to see if the script did anything is to check Edit → Undo. If your script made any changes to the current image, it will be listed as the last undo action.







2.2. Installing Script-Fu scripts



2.4. Different Kinds Of Script-Fus

2.4. Different Kinds Of Script-Fus



2. Using Script-Fu Scripts



2.4. Different Kinds Of Script-Fus

There are two kinds of Script-Fus:

Standalone Script-Fus

These scripts do not require an existing image. They usually create an image themselves. In the past there were several scripts supplied with GIMP that belonged to this category. However, the results all looked dated compared to todays standards and they were not well maintained. Which is the reason that they are not installed anymore since GIMP 2.10.

In case you would like to keep using these scripts, they are still available as separate downloads that you have to install yourself. The scripts and other resources can be downloaded from here.

Image-dependent Script-Fus

Most scripts and plug-ins are logically categorized and added to the menu that closely resembles their function. Most of the scripts appear in the Filters menu, but there are also several in the Colors.

Some scripts with specific functions appear in other menus, e.g. the script New Brush (script-fu-paste-as-brush) is integrated in the Edit menu (Edit \rightarrow Paste as \rightarrow Paste as New Brush...), that is more logical.



Note

Some older scripts that haven't been updated may still appear in a dedicated top-level Script-Fu menu.







2.3. Do's and Don'ts



3. A Script-Fu Tutorial

3. A Script-Fu Tutorial



Chapter 13. Scripting and writing plug-ins



3. A Script-Fu Tutorial

In this training course, we'll introduce you to the fundamentals of Scheme necessary to use Script-Fu, and then build a handy script that you can add to your toolbox of scripts. The script prompts the user for some text, then creates a new image sized perfectly to the text. We will then enhance the script to allow for a buffer of space around the text. We will conclude with a few suggestions for ways to ramp up your knowledge of Script-Fu.



Note

This section was adapted from a tutorial written for the GIMP 1 User Manual by Mike Terry.

3.1. Getting Acquainted With Scheme

3.1.1. Start with Scheme

<u>Scheme</u> is a dialect of the Lisp family of programming languages. GIMP uses TinyScheme, which is a lightweight interpreter of a subset of the so-called R5RS standard.

The first thing to learn is that:

Every statement in Scheme is surrounded by parentheses ().

The second thing you need to know is that:

The function name/operator is always the first item in the parentheses, and the rest of the items are parameters to the function.

However, not everything enclosed in parentheses is a function — they can also be items in a list — but we'll get to that later. This notation is referred to as prefix notation, because the function prefixes everything else. If you're familiar with postfix notation, or own a calculator that uses Reverse Polish Notation (such as most HP calculators), you should have no problem adapting to formulating expressions in Scheme.

The third thing to understand is that:

Mathematical operators are also considered functions, and thus are listed first when writing mathematical expressions.

This follows logically from the prefix notation that we just mentioned.

3.1.2. Examples Of Prefix, Infix, And Postfix Notations

Here are some quick examples illustrating the differences between *prefix*, *infix*, and *postfix* notations. We'll add a 1 and 23 together:

- Prefix notation: + 1 23 (the way Scheme will want it)
- Infix notation: 1 + 23 (the way we "normally" write it)
- Postfix notation: 1 23 + (the way many HP calculators will want it)

3.1.3. Practicing In Scheme

In GIMP, select Filters \rightarrow Development \rightarrow Script-Fu Console from the main menu. This will start up the Script-Fu Console window, which allows us to work interactively in Scheme.

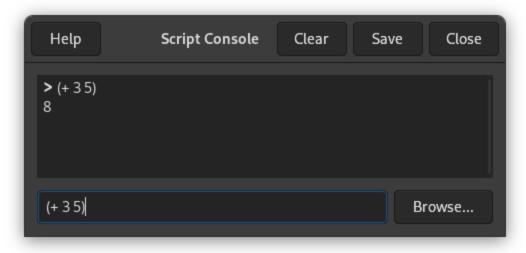
3.1.4. The Script-Fu Console Window

At the bottom of this window is a text entry field for commands. Here, we can test out simple Scheme commands interactively. Let's start out easy, and add some numbers:

(+35)

Typing this in and hitting **Enter** yields the expected answer of 8 in the center window.

Figure 13.1. Use Script-Fu Console.



The "+" function can take more arguments, so we can add more than one number:

(+356)

This also yields the expected answer of 14.

So far, so good — we type in a Scheme statement and it's executed immediately in the Script-Fu Console window. Now for a word of caution...

3.1.5. Watch Out For Extra Parentheses

If you're like me, you're used to being able to use extra parentheses whenever you want to — like when you're typing a complex mathematical equation and you want to separate the parts by parentheses to make it clearer when you read it. In Scheme, you have to be careful and not insert these extra parentheses incorrectly. For example, say we wanted to add 3 to the result of adding 5 and 6 together:

$$3 + (5 + 6) + 7 = ?$$

Knowing that the + operator can take a list of numbers to add, you might be tempted to convert the above to the following:

$$(+ 3 (5 6) 7)$$

However, this is incorrect — remember, every statement in Scheme starts and ends with parens, so the Scheme interpreter will think that you're trying to call a function named "5" in the second group of parens, rather than summing those numbers before adding them to 3.

The correct way to write the above statement would be:

$$(+3(+56)7)$$

3.1.6. Make Sure You Have The Proper Spacing, Too

If you are familiar with other programming languages, like C/C++, Perl or Java, you know that you don't need white space around mathematical operators to properly form an expression:

3+5, 3 +5, 3+ 5

These are all accepted by C/C++, Perl and Java compilers. However, the same is not true for Scheme. You must have a space after a mathematical operator (or any other function name or operator) in Scheme for it to be correctly interpreted by the Scheme interpreter.

Practice a bit with simple mathematical equations in the Script-Fu Console until you're totally comfortable with these initial concepts.







2.4. Different Kinds Of Script-Fus



3.2. Variables And Functions

3.2. Variables And Functions



3. A Script-Fu Tutorial



3.2. Variables And Functions

Now that we know that every Scheme statement is enclosed in parentheses, and that the function name/operator is listed first, we need to know how to create and use variables, and how to create and use functions. We'll start with the variables.

3.2.1. Declaring Variables

Although there are a couple of different methods for declaring variables, the preferred method is to use the **let*** construct. If you're familiar with other programming languages, this construct is equivalent to defining a list of local variables and a scope in which they're active. As an example, to declare two variables, a and b, initialized to 1 and 2, respectively, you'd write:

or, as one line:

```
(let* ( (a 1) (b 2) ) (+ a b) )
```



Note

You'll have to put all of this on one line if you're using the console window. In general, however, you'll want to adopt a similar practice of indentation to help make your scripts more readable. We'll talk a bit more about this in the section on White Space.

This declares two local variables, a and b, initializes them, then prints the sum of the two variables.

3.2.2. What Is A Local Variable?

You'll notice that we wrote the summation (+ a b) within the parens of the let* expression, not after it.

This is because the let* statement defines an area in your script in which the declared variables are usable; if you type the (+ a b) statement after the (let* ...) statement, you'll get an error, because the declared variables are only valid within the context of the let* statement; they are what programmers call local variables.

3.2.3. The General Syntax Of let*

The general form of a let* statement is:

```
(let* ( variables )
  expressions )
```

where variables are declared within parens, e.g., (a 2), and expressions are any valid Scheme expressions. Remember that the variables declared here are only valid within the let* statement — they're local variables.

3.2.4. White Space

Previously, we mentioned the fact that you'll probably want to use indentation to help clarify and organize your scripts. This is a good policy to adopt, and is not a problem in Scheme — white space is ignored by the Scheme interpreter, and can thus be liberally applied to help clarify and organize the code within a script. However, if you're working in Script-Fu's Console window, you'll have to enter an entire expression on one line; that is, everything between the opening and closing parens of an expression must come on one line in the Script-Fu Console window.

3.2.5. Assigning A New Value To A Variable

Once you've initialized a variable, you might need to change its value later on in the script. Use the set! statement to change the variable's value:

```
(let* ( (theNum 10) ) (set! theNum (+ theNum theNum)) )
```

Try to guess what the above statement will do, then go ahead and enter it in the Script-Fu Console window.

3.2.6. Functions

Now that you've got the hang of variables, let's get to work with some functions. You declare a function with the following syntax:

where *name* is the name assigned to this function, *param-List* is a space-delimited list of parameter names, and *expressions* is a series of expressions that the function executes when it's called. For example:

```
(define (AddXY inX inY) (+ inX inY) )
```

AddXY is the function's name and inX and inY are the variables. This function takes its two parameters and adds them together.

If you've programmed in other imperative languages (like C/C++, Java, Pascal, etc.), you might notice that a couple of things are absent in this function definition when compared to other programming languages.

- First, notice that the parameters don't have any "types" (that is, we didn't declare them as strings, or integers, etc.). Scheme is a type-less language. This is handy and allows for quicker script writing.
- Second, notice that we don't need to worry about how to "return" the result of our function the last statement is the value "returned" when calling this function. Type the function into the console, then try something like:

```
(AddXY (AddXY 5 6) 4)
```



3. A Script-Fu Tutorial







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3.3. Lists, Lists And More Lists



3. A Script-Fu Tutorial



3.3. Lists, Lists And More Lists

We've trained you in variables and functions, and now enter the murky swamps of Scheme's lists.

3.3.1. Defining A List

Before we talk more about lists, it is necessary that you know the difference between atomic values and lists. You've already seen atomic values when we initialized variables in the previous lesson. An atomic value is a single value. So, for example, we can assign the variable "x" the single value of 8 in the following statement:

```
(let* ( (x 8) ) x)
```

(We added the expression x at the end to print out the value assigned to x—normally you won't need to do this. Notice how let* operates just like a function: The value of the last statement is the value returned.)

A variable may also refer to a list of values, rather than a single value. To assign the variable x the list of values 1, 3, 5, we'd type:

```
(let* ( (x '(1 3 5))) x)
```

Try typing both statements into the Script-Fu Console and notice how it replies. When you type the first statement in, it simply replies with the result:

8

However, when you type in the other statement, it replies with the following result:

```
(1 \ 3 \ 5)
```

When it replies with the value 8 it is informing you that x contains the atomic value 8. However, when it replies with (1 3 5), it is then informing you that x contains not a single value, but a list of values. Notice that there are no commas in our declaration or assignment of the list, nor in the printed result.

The syntax to define a list is:

```
'(a b c)
```

where a, b, and c are literals. We use the apostrophe (') to indicate that what follows in the parentheses is a list of literal values, rather than a function or expression.

An empty list can be defined as such:

'()

or simply:

()

Lists can contain atomic values, as well as other lists:

Notice that after the first apostrophe, you no longer need to use an apostrophe when defining the inner lists. Go ahead and copy the statement into the Script-Fu Console and see what it returns.

You should notice that the result returned is not a list of single, atomic values; rather, it is a list of a literal ("GIMP"), the list (1 2 3), etc.

3.3.2. How To Think Of Lists

It's useful to think of lists as composed of a "head" and a "tail". The head is the first element of the list, the tail the rest of the list. You'll see why this is important when we discuss how to add to lists and how to access elements in the list.

3.3.3. Creating Lists Through Concatenation (The Cons Function)

One of the more common functions you'll encounter is the cons function. It takes a value and places it to its second argument, a list. From the previous section, I suggested that you think of a list as being composed of an element (the head) and the remainder of the list (the tail). This is exactly how cons functions — it adds an element to the head of a list. Thus, you could create a list as follows:

```
(cons 1 '(2 3 4) )
  The result is the list (1 2 3 4).
  You could also create a list with one element:
(cons 1 () )
```

You can use previously declared variables in place of any literals, as you would expect.

3.3.4. Defining A List Using The list Function

To define a list composed of literals or previously declared variables, use the list function:

```
(list 5 4 3 a b c)
```

This will compose and return a list containing the values held by the variables a, b and c. For example:

This code creates the list (5 4 3 1 2 3).

3.3.5. Accessing Values In A List

To access the values in a list, use the functions car and cdr, which return the first element of the list and the rest of the list, respectively. These functions break the list down into the head::tail construct I mentioned earlier.

3.3.6. The car Function

car returns the first element of the list (the head of the list). The list needs to be non-null (not empty). Thus, the following returns the first element of the list:

```
(car '("first" 2 "third"))
  which is:
"first"
```

3.3.7. The cdr function

cdr returns the remainder of the list after the first element (the tail of the list). If there is only one element in the list, it returns an empty list.

```
(cdr '("first" 2 "third"))
  returns:
(2 "third")
  whereas the following:
(cdr '("one and only"))
  returns:
()
```

3.3.8. Accessing Other Elements In A List

OK, great, we can get the first element in a list, as well as the rest of the list, but how do we access the second, third or other elements of a list? There exist several "convenience" functions to access, for example, the head of the tail of a list (caadr), the tail of the tail of a list (cddr), etc.

The basic naming convention is easy: The a's and d's represent the heads and tails of lists, so

```
(car (cdr (car x) ) )
  could be written as:
(cadar x)
```

To get some practice with list-accessing functions, try typing in the following (except all on one line if you're using the console); use different variations of car and cdr to access the different elements of the list:

Try accessing the number 3 in the list using only two function calls. If you can do that, you're on your way to becoming a Script-Fu Master!



Note

In Scheme, a semicolon (;) marks the beginning of a comment. It, and everything that follows it on the same line, are ignored by the script interpreter, so you can use this to add comments to refresh your memory when you look at the script later.







3.2. Variables And Functions



3.4. Your First Script-Fu Script

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3.4. Your First Script-Fu Script



3. A Script-Fu Tutorial



3.4. Your First Script-Fu Script

Do you not need to stop and catch your breath? No? Well then, let's proceed with your fourth lesson — your first Script-Fu Script.

3.4.1. Creating A Text Box Script

One of the most common operations I perform in GIMP is creating a box with some text in it for a web page, a logo or whatever. However, you never quite know how big to make the initial image when you start out. You don't know how much space the text will fill with the font and font size you want.

This problem can be solved and automated with Script-Fu.

We will, therefore, create a script, called Text Box, which creates an image correctly sized to fit snugly around a line of text the user inputs. We'll also let the user choose the font, font size and text color.

3.4.2. Editing And Storing Your Scripts

Up until now, we've been working in the Script-Fu Console. Now, however, we're going to switch to editing script files. Script files should be plain text files that you can edit in a text or code editor. The name you give is not that important, except for being able to recognize the script. You should give your script file the extension ".scm". Where you place your scripts is a matter of preference. In GIMP's <u>folder preferences</u> you can see in which folders

Where you place your scripts is a matter of preference. In GIMP's <u>folder preferences</u> you can see in which folders GIMP looks for scripts. It is also possible to add a new folder there. The folder where GIMP stores its own scripts is usually not the best choice for your scripts, but for the rest feel free to choose what suits you best.

3.4.3. The Bare Essentials

Every Script-Fu script defines at least one function, which is the script's main function. This is where you do the work. Every script must also register with the procedural database, so you can access it within GIMP.

We'll define the main function first:

(define (script-fu-text-box inText inFont inFontSize inTextColor))

Here, we've defined a new function called script-fu-text-box that takes four parameters, which will later correspond to some text, a font, the font size, and the text's color. The function is currently empty and thus does nothing. So far, so good — nothing new, nothing fancy.

3.4.4. Naming Conventions

Scheme's naming conventions seem to prefer lowercase letters with hyphens, which I've followed in the naming of the function. However, I've departed from the convention with the parameters. I like more descriptive names for my parameters and variables, and thus add the "in" prefix to the parameters so I can quickly see that they're values passed into the script, rather than created within it. I use the prefix "the" for variables defined within the script. It's GIMP convention to name your script functions script-fu-abc, because then when they're listed in the procedural database, they'll all show up under Script-Fu when you're listing the functions. This also helps distinguish them from plug-ins.

3.4.5. Registering The Function

Now, let's register the function with GIMP. This is done by calling the function script-fu-register. When GIMP reads in a script, it will execute this function, which registers the script with the procedural database. You can place this function call wherever you wish in your script, but I usually place it at the end, after all my other code. Here's the listing for registering this function (I will explain all its parameters in a minute):

```
(script-fu-register
  "script-fu-text-box"
                                               ;function name
  "Text Box"
                                               ;menu label
  "Creates a simple text box, sized to fit\
   around the user's choice of text,\
   font, font size, and color."
                                               ;description
  "Michael Terry"
                                               ;author
  "copyright 1997, Michael Terry;\
   2009, the GIMP Documentation Team"
                                               ;copyright notice
  "October 27, 1997"
                                               ;date created
                                           ;image type that the script works on
 SF-STRING
                                  "Text Box"
                                               ;a string variable
                 "Font"
                                  "Charter"
                                               ;a font variable
 SF-FONT
 SF-ADJUSTMENT
                 "Font size"
                                  '(50 1 1000 1 10 0 1)
                                               ;a spin-button
 SF-COLOR
                 "Color"
                                  '(0 0 0)
                                               ;color variable
(script-fu-menu-register "script-fu-text-box" "<Image>/Filters/Tutorial")
```

Save these functions in a text file with a .scm suffix in a subdirectory of your script directory, with the same name as your script file, then restart GIMP. The new script will appear as Filters \rightarrow Tutorial \rightarrow Text Box.

If you invoke this new script, it won't do anything, of course, but you can view the prompts you created when registering the script (more information about what we did is covered next).

Finally, if you invoke the Procedure Browser ($Help \rightarrow Procedure Browser$), you'll notice that our script now appears in the database.

3.4.6. Steps For Registering The Script

To register our script with GIMP, we call the function script-fu-register, fill in the seven required parameters and add our script's own parameters, along with a description and default value for each parameter.

The Required Parameters

- The name of the function we defined. This is the function called when our script is invoked (the entry-point into our script). This is necessary because we may define additional functions within the same file, and GIMP needs to know which of these functions to call. In our example, we only defined one function, text-box, which we registered.
- The menu label is the name that will be shown in the menu. To specify the location, see <u>Section 3.4.9</u>, "Registering the Menu Location".
- A description of your script, to be displayed in the Procedure Browser.
- Your name (the author of the script).
- *Copyright* information.
- The date the script was made, or the last revision of the script.
- The *types* of images the script works on. This may be any of the following: RGB, RGBA, GRAY, GRAYA, INDEXED, INDEXEDA. Or it may be none at all in our case, we're creating an image, and thus don't need to define the type of image on which we work.

3.4.7. Registering The Script's Parameters

Once we have listed the required parameters, we then need to list the parameters that correspond to the parameters our script needs. When we list these params, we give hints as to what their types are. This is for the dialog which pops up when the user selects our script. We also provide a default value.

This section of the registration process has the following format:

Param Type	Description	Example
SF-IMAGE	If your script operates on an open image, this should be the first parameter after the required parameters. GIMP will pass in a reference to the image in this parameter.	3
SF- DRAWABLE	If your script operates on an open image, this should be the second parameter after the SF-IMAGE param. It refers to the active layer. GIMP will pass in a reference to the active layer in this parameter.	17
SF-STRING	Accepts strings.	"Some text"
SF-COLOR	Indicates that a color is requested in this parameter.	'(0 102 255)
SF-TOGGLE	A checkbox is displayed, to get a Boolean value.	TRUE or FALSE

3.4.8. The Script-Fu parameter API^[5]



Note

Beside the above parameter types there are more types for the interactive mode, each of them will create a widget in the control dialog. You will find a list of these parameters with descriptions and examples in the test script plug-ins/script-fu/scripts/test-sphere-v3.scm shipped with the GIMP source code.

Param Type	Description	
	Creates an adjustment widget in the dialog. SF-ADJUSTMENT "label" '(value lower upper step_inc page_inc digits type) Vidget arguments list	
	Element Description	
	label" Text printed before the widget.	
SF-	value Value print at the start.	
ADJUSTMENT	ower / upper The lower / upper values (range of choice).	
	step_inc Increment/decrement value.	
	page_inc Increment/decrement value using page key.	
	ligits Digits after the point (decimal part).	
	ype One of: SF-SLIDER or 0, SF-SPINNER or 1	
CE COLOR	Creates a color button in the dialog. SF-COLOR "label" '(red green blue) or SF-COLOR "label" "color" Vidget arguments list	
SF-COLOR	Element Description	
	label" Text printed before the widget.	
	(red green blue) List of three values for the red, green and blue components.	
	color" Color name in CSS notation.	
SF-FONT	Creates a font-selection widget in the dialog. It returns a fontname as a string. There are two new gimp-text procedures to ease the use of this return parameter: (gimp-text-fontname image drawable x-pos y-pos text border antialias size unit font) (gimp-text-get-extents-fontname text size unit font) where font is the fontname you get. The size specified in the fontname is silently ignored. It is only used in the font-selector. So you are asked to set it to a useful value (24 pixels is a good choice). SF-FONT "label" "fontname" Widget arguments list	

Param Type	Description		
	Element Description "label" Text printed before the widget. "fontname" Name of the default font.		
SF-BRUSH	It will create a widget in the control dialog. The widget consists of a preview area (which when pressed will produce a popup preview) and a button with the "" label. The button will popup a dialog where brushes can be selected and each of the characteristics of the brush can be modified. SF-BRUSH "Brush" '("Circle (03)" 100 44 0) Here the brush dialog will be popped up with a default brush of Circle (03) opacity 100 spacing 44 and paint mode of Normal (value 0). If this selection was unchanged the value passed to the function as a parameter would be '("Circle (03)" 100 44 0).		
SF-PATTERN	It will create a widget in the control dialog. The widget consists of a preview area (which when pressed will produce a popup preview) and a button with the "" label. The button will popup a dialog where patterns can be selected. SF-PATTERN "Pattern" "Maple Leaves" The value returned when the script is invoked is a string containing the pattern name. If the above selection was not altered the string would contain "Maple Leaves".		
SF- GRADIENT	It will create a widget in the control dialog. The widget consists of a button containing a preview of the selected gradient. If the button is pressed a gradient selection dialog will popup. SF-GRADIENT "Gradient" "Deep Sea" The value returned when the script is invoked is a string containing the gradient name. If the above selection was not altered the string would contain "Deep Sea".		
SF-PALETTE	It will create a widget in the control dialog. The widget consists of a button containing the name of the selected palette. If the button is pressed a palette selection dialog will popup. SF-PALETTE "Palette" "Named Colors" The value returned when the script is invoked is a string containing the palette name. If the above selection was not altered the string would contain "Named Colors".		
SF- FILENAME	It will create a widget in the control dialog. The widget consists of a button containing the name of a file. If the button is pressed a file selection dialog will popup. SF-FILENAME "label" (string-append "" gimp-data-directory "/scripts/beavis.jpg") The value returned when the script is invoked is a string containing the filename.		
SF-DIRNAME	Only useful in interactive mode. Very similar to SF-FILENAME, but the created widget allows to choose a directory instead of a file. SF-DIRNAME "label" "/var/tmp/images" The value returned when the script is invoked is a string containing the dirname.		
SF-OPTION	It will create a widget in the control dialog. The widget is a combo-box showing the options that are passed as a list. The first option is the default choice. SF-OPTION "label" '("option1" "option2") The value returned when the script is invoked is the number of the chosen option, where the option first is counted as 0.		
SF-ENUM	It will create a widget in the control dialog. The widget is a combo-box showing all enum values for the given enum type. This has to be the name of a registered enum, without the "Gimp" prefix. The second parameter specifies the default value, using the enum value's nick. SF-ENUM "Interpolation" '("InterpolationType" "linear") The value returned when the script is invoked corresponds to chosen enum value.		

3.4.9. Registering the Menu Location

Once we have registered our script, we need to tell GIMP where it should be found in the menu.

The best menu location of your script depends on its function. Most scripts are found in the Filters and Colors menus.

For the current script, which creates a new image, we choose a submenu of Filters \rightarrow Tutorial. This is what the line with the script-fu-menu-register function does. Thus, we registered our Text Box script here: Filters \rightarrow Tutorial \rightarrow Text Box.

Any submenu that you specify in your script that doesn't exist yet will be automatically created by GIMP.

[5] This section is not part of the original tutorial.



1



3.3. Lists, Lists And More Lists



3.5. Adding Additional Functionality

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3.5. Adding Additional Functionality



3. A Script-Fu Tutorial



3.5. Adding Additional Functionality

Let us continue with our training and add some functionality to our script.

3.5.1. Creating A New Image

In the previous lesson, we created an empty function and registered it with GIMP. In this lesson, we want to provide functionality to our script — we want to create a new image, add the user's text to it and resize the image to fit the text exactly.

Once you know how to set variables, define functions and access list members, the rest is all downhill — all you need to do is familiarize yourself with the functions available in GIMP's procedural database and call those functions directly. Open the <u>Section 12.9</u>, "The <u>Procedure Browser"</u>.

Let's begin by making a new image. We'll create a new variable, the Image, set to the result of calling GIMP's built-in function gimp-image-new.

As you can see from the DB Browser, the function gimp-image-new takes three parameters — the image's width, height and the type of image. Because we'll later resize the image to fit the text, we'll make a 10×10 pixels RGB image. We'll store the image's width and sizes in some variables, too, as we'll refer to and manipulate them later in the script.

Note: We used the value RGB to specify that the image is an RGB image. We could have also used 0, but RGB is more descriptive when we glance at the code.

You should also notice that we took the head of the result of the function call. This may seem strange, because the database explicitly tells us that it returns only one value — the ID of the newly created image. However, all GIMP functions return a list, even if there is only one element in the list, so we need to get the head of the list.

3.5.2. Adding A New Layer To The Image

Now that we have an image, we need to add a layer to it. We'll call the gimp-layer-new function to create the layer, passing in the ID of the image we just created. (From now on, instead of listing the complete function, we'll only list the lines we're adding to it. You can see the complete script here.) Because we've declared all of the local variables we'll use, we'll also close the parentheses marking the end of our variable declarations:

```
theImageWidth
theImageHeight
RGB-IMAGE
100
LAYER-MODE-NORMAL
)
)
)
);end of our local variables
```

Once we have the new layer, we need to add it to the image:

```
(gimp-image-insert-layer the Image the Layer 0 0)
```

Now, just for fun, let's see the fruits of our labors up until this point, and add this line to show the new, empty image:

```
(gimp-display-new theImage)
```

Save your work, restart GIMP, run the script and a new image should pop up. It will probably contain garbage (random colors), because we haven't erased it. We'll get to that in a second.

3.5.3. Adding The Text

Go ahead and remove the line to display the image (or comment it out with a (;) as the first character of the line). Before we add text to the image, we need to set the background and foreground colors so that the text appears in the color the user specified. We'll use the gimp-context-set-back/foreground functions:

```
(gimp-context-set-background '(255 255 255) )
(gimp-context-set-foreground inTextColor)
```

With the colors properly set, let's now clean out the garbage currently in the image by filling the drawable with the background color:

```
(gimp-drawable-fill theLayer FILL-BACKGROUND)
```

With the image cleared, we're ready to add some text:

Although a long function call, it's fairly straightforward if you go over the parameters while looking at the function's entry in the DB Browser. Basically, we're creating a new text layer and assigning it to the variable theText. Now that we have the text, we can grab its width and height and resize the image and the image's layer to the text's size:

```
(set! theImageWidth (car (gimp-drawable-get-width theText) ) )
(set! theImageHeight (car (gimp-drawable-get-height theText) ) )
(gimp-image-resize theImage theImageWidth theImageHeight 0 0)
(gimp-layer-resize theLayer theImageWidth theImageHeight 0 0)
```

If you're like me, you're probably wondering what a drawable is when compared to a layer. The difference between the two is that a drawable is anything that can be drawn into, including layers but also channels, layer masks, the selection, etc; a layer is a more specific version of a drawable. In most cases, the distinction is not important. With the image ready to go, we can now re-add our display line:

(gimp-display-new theImage)

Save your work, restart GIMP and give your first script a run!

3.5.4. Clearing The Dirty Flag

If you try to close the image created without first saving the file, GIMP will ask you if you want to save your work before you close the image. It asks this because the image is marked as dirty, or unsaved. In the case of our script, this is a nuisance for the times when we simply give it a test run and don't add or change anything in the resulting image — that is, our work is easily reproducible in such a simple script, so it makes sense to get rid of this dirty flag. To do this, we can clear the dirty flag after displaying the image:

(gimp-image-clean-all theImage)

This will set dirty count to 0, making it appear to be a "clean" image.

Whether to add this line or not is a matter of personal taste. I use it in scripts that produce new images, where the results are trivial, as in this case. If your script is very complicated, or if it works on an existing image, you will probably not want to use this function.







3.4. Your First Script-Fu Script



3.6. Extending The Text Box Script

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3.6. Extending The Text Box Script



3. A Script-Fu Tutorial



3.6. Extending The Text Box Script

3.6.1. Handling Undo Correctly

When creating a script, you want to give your users the ability to undo their actions, should they make a mistake. This is easily accomplished by calling the functions gimp-image-undo-group-start and gimp-image-undo-group-end around the code that manipulates the image. You can think of them as matched statements that let GIMP know when to start and stop recording manipulations on the image, so that those manipulations can later be undone. If you are creating a new image entirely, it doesn't make sense to use these functions because you're not changing an existing image. However, when you are changing an existing image, you most surely want to use these functions.

3.6.2. Extending The Script A Little More

Now that we have a very handy-dandy script to create text boxes, let's add two features to it:

- Currently, the image is resized to fit exactly around the text there's no room for anything, like drop shadows
 or special effects (even though many scripts will automatically resize the image as necessary). Let's add a
 buffer around the text, and even let the user specify how much buffer to add as a percentage of the size of the
 resultant text.
- This script could easily be used in other scripts that work with text. Let's extend it so that it returns the image and the layers, so other scripts can call this script and use the image and layers we create.

3.6.3. Modifying The Parameters And The Registration Function

Undoing a script works nearly flawlessly when using these functions.

To let the user specify the amount of buffer, we'll add a parameter to our function and the registration function:

```
(define (script-fu-text-box inTest inFont inFontSize inTextColor inBufferAmount)
(let*
         ; define our local variables
         ; create a new image:
         (theImageWidth 10)
         (theImageHeight 10)
         (theImage (car
                         (gimp-image-new
                          theImageWidth
                          theImageHeight
                          RGB
                    )
         (theText)
                             ;a declaration for the text
                             ;we create later
         (theBuffer)
                             ; added
         (theLayer
                        (gimp-layer-new
                         theImage
                          "layer 1"
                         theImageWidth
                         theImageHeight
```

```
RGB-IMAGE
                        100
                        LAYER-MODE-NORMAL
                   )
      ) ;end of our local variables
[Code here]
(script-fu-register
  "script-fu-text-box"
                                               ;function name
  "Text Box"
                                               ;menu label
  "Creates a simple text box, sized to fit\
   around the user's choice of text,\
   font, font size, and color.'
                                               ;description
  "Michael Terry"
                                               ;author
  "copyright 1997, Michael Terry;\
   2009, the GIMP Documentation Team"
                                               ;copyright notice
  "October 27, 1997"
                                               ;date created
                                           ;image type that the script works on
                 "Text"
                                  "Text Box"
 SF-STRING
                                               ;a string variable
 SF-FONT
                 "Font"
                                  "Charter"
                                               ;a font variable
                 "Font size"
 SF-ADJUSTMENT
                                  '(50 1 1000 1 10 0 1)
                                               ;a spin-button
                 "Color"
                                  '(0 0 0)
 SF-COLOR
                                               ;color variable
                 "Buffer amount" '(35 0 100 1 10 1 0)
 SF-ADJUSTMENT
                                               ;a slider
(script-fu-menu-register "script-fu-text-box" "<Image>/Filters/Tutorial")
```

3.6.4. Adding The New Code

We're going to add code in two places: right before we resize the image, and at the end of the script (to return the new image, the layer and the text).

After we get the text's height and width, we need to resize these values based on the buffer amount specified by the user. We won't do any error checking to make sure it's in the range of 0-100% because it's not life-threatening, and because there's no reason why the user can't enter a value like "200" as the percent of buffer to add.

```
(set! theBuffer (* theImageHeight (/ inBufferAmount 100) ) )
(set! theImageHeight (+ theImageHeight theBuffer theBuffer) )
(set! theImageWidth (+ theImageWidth theBuffer theBuffer) )
```

All we're doing here is setting the buffer based on the height of the text, and adding it twice to both the height and width of our new image. (We add it twice to both dimensions because the buffer needs to be added to both sides of the text.) Now that we have resized the image to allow for a buffer, we need to center the text within the image. This is done by moving it to the (x, y) coordinates of (theBuffer, theBuffer). I added this line after resizing the layer and the image:

```
(gimp-layer-set-offsets theText theBuffer theBuffer)
```

Go ahead and save your script, and try it out after restarting GIMP.

All that is left to do is return our image, the layer, and the text layer. After displaying the image, we add this line:

```
(list theImage theLayer theText)
```

This is the last line of the function, making this list available to other scripts that want to use it. To use our new text box script in another script, we could write something like the following:

```
"35"
)
)
(gimp-image-flatten (car theResult))
```

Congratulations, you are on your way to your Black Belt of Script-Fu!







3.5. Adding Additional Functionality



3.7. Your script and its working

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3.7. Your script and its working





3.7. Your script and its working

3.7.1. What you write

```
Below the complete script:
(script-fu-register
          "script-fu-text-box"
                                                       ;function name
          "Text Box"
                                                       ;menu label
          "Creates a simple text box, sized to fit∖
            around the user's choice of text,\
            font, font size, and color."
                                                       ;description
          "Michael Terry"
                                                       ;author
          "copyright 1997, Michael Terry;\
            2009, the GIMP Documentation Team"
                                                       ;copyright notice
          "October 27, 1997"
                                                       ;date created
                                           ;image type that the script works on
                         "Text"
                                          "Text Box"
          SF-STRING
                                                       ;a string variable
                         "Font"
                                                       ;a font variable
          SF-FONT
                                          "Charter"
          SF-ADJUSTMENT
                         "Font size"
                                          '(50 1 1000 1 10 0 1)
                                                       ;a spin-button
          SF-COLOR
                         "Color"
                                          '(0 0 0)
                                                       ;color variable
                         "Buffer amount" '(35 0 100 1 10 1 0)
          SF-ADJUSTMENT
                                                       ;a slider
(script-fu-menu-register "script-fu-text-box" "<Image>/Filters/Tutorial")
(define (script-fu-text-box inText inFont inFontSize inTextColor inBufferAmount)
  (let*
     ; define our local variables
     ; create a new image:
     (theImageWidth 10)
     (theImageHeight 10)
     (theImage)
     (theImage
                    (gimp-image-new
                      theImageWidth
                      theImageHeight
                      RGB
                )
      (theText)
                            ;a declaration for the text
      (theBuffer)
                            ;create a new layer for the image
     (theLayer
                    (gimp-layer-new
                      theImage
                      "layer 1"
                      theImageWidth
                      theImageHeight
                      RGB-IMAGE
                      100
                      LAYER-MODE-NORMAL
                )
    ) ;end of our local variables
```

```
(gimp-image-insert-layer theImage theLayer 0 0)
    (gimp-context-set-background '(255 255 255) )
    (gimp-context-set-foreground inTextColor)
    (gimp-drawable-fill theLayer FILL-BACKGROUND)
    (set! theText
                  (car
                        (gimp-text-font
                        theImage theLayer
                        0 0
                        inText
                        а
                        TRUE
                        inFontSize
                        inFont)
    (set! theImageWidth
                          (car (gimp-drawable-get-width theText) ) )
    (set! theImageHeight (car (gimp-drawable-get-height theText) ) )
    (set! theBuffer (* theImageHeight (/ inBufferAmount 100) ) )
    (set! theImageHeight (+ theImageHeight theBuffer theBuffer) )
    (set! theImageWidth (+ theImageWidth theBuffer theBuffer) )
    (gimp-image-resize theImage theImageWidth theImageHeight 0 0)
    (gimp-layer-resize theLayer theImageWidth theImageHeight 0 0)
    (gimp-layer-set-offsets theText theBuffer theBuffer)
    (gimp-floating-sel-to-layer theText)
    (gimp-display-new theImage)
    (list theImage theLayer theText)
)
```

3.7.2. What you obtain

Figure 13.2. The dialog

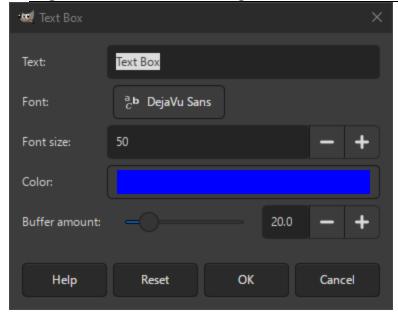


Figure 13.3. The resulting image









3.6. Extending The Text Box Script

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4. A Python plug-in writing Tutorial

4. A Python plug-in writing Tutorial



Chapter 13. Scripting and writing plug-ins



4. A Python plug-in writing Tutorial

This tutorial will teach you the basics about writing a Python plug-in for GIMP 3.0. You are expected to already have some basic knowledge about writing Python in general. If not, there are enough Python courses online, we are not going to duplicate that here.

GIMP plug-ins in Python (and other languages too) are called from within GIMP to perform certain actions. To be able to know how to communicate with, and call the plug-in, GIMP needs to know by what name to call it and what functions it supports.

There are certain requirements regarding a plug-in's filename and directory name, which have to be the same. For more details see <u>Installing New Plug-Ins</u>.

4.1. The basic elements of a plug-in for GIMP

We will discuss the basic parts of a plug-in that are required, or at least very common for working with GIMP.

- Required on Linux and macOS, and common practice on Windows, is to start with a so-called shebang or
 hashbang, an encoding, and a copyright notice. The first line is a shebang, which specifies how this script
 can be executed. The next line specifies the encoding of the Python file. We recommend utf-8. Usually this is
 followed by several lines specifying the license under which you publish the script and a short description of
 what the script does. We will not go deeper into this, since this is common to Python in general.
- Importing required modules to get access to GIMP and optionally GEGL functions.
- Declare a class with several pre-defined functions that you need to adjust, so that GIMP knows what
 functions are available in your plug-in, and what functionality they support. We will go into more detail about
 this below.
- A call that starts your plug-in, or queries its capabilities, depending on the arguments sent to it by GIMP.

4.1.1. Required modules

To be able to access GIMP functions, we start with import gi. This module can figure out what functions are available in each module defined through "object introspection". What this means for us, is that we import all GIMP related modules that we may need through calls to gi.repository.

For basic functionality, only the Gimp and GimpUi modules may be enough. If you want to run your plug-in from the command line, you don't even need GimpUi. Let's start with an example.

```
#!/usr/bin/env pvthon3
# -*- coding: utf-8 -*-
    GIMP - The GNU Image Manipulation Program
    Copyright (C) 1995 Spencer Kimball and Peter Mattis
    gimp-tutorial-plug-in.py
    sample plug-in to illustrate the Python plug-in writing tutorial
    Copyright (C) 2023 Jacob Boerema
    This program is free software: you can redistribute it and/or modify
    it under the terms of the GNU General Public License as published by
    the Free Software Foundation; either version 3 of the License, or
    (at your option) any later version.
    This program is distributed in the hope that it will be useful,
    but WITHOUT ANY WARRANTY; without even the implied warranty of
   MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
   GNU General Public License for more details.
   You should have received a copy of the GNU General Public License
```

https://docs.gimp.org/3.0/en/gimp-using-python-plug-in-tutorial.html

```
# along with this program. If not, see <a href="https://www.gnu.org/licenses/">https://www.gnu.org/licenses/</a>.
import sys
import gi
gi.require_version('Gimp', '3.0')
from gi.repository import Gimp
gi.require_version('GimpUi', '3.0')
from gi.repository import GimpUi
from gi.repository import Glib
```

We start with importing sys, which we need at the end for access to sys.argv, following that import gi tells Python that it needs to load the gi module. This module is used to enable access to GIMP specific functions through "object introspection".

In the next line we tell gi that we require GIMP's API version to be version 3.0. (This plug-in won't work with older versions of GIMP.) The following line requests to import all functions, classes, etc. from the Gimp module. The next two lines, do the same thing for GimpUi. GimpUi contains all the interface related elements for GIMP. If you plan to make a plug-in that is only going to be called from the command line, then you won't need this. We finish with importing GLib, which we need later for access to GLib.Error.

There are other optional modules that you can use too, like Gegl and many others, but we won't go into that here.

4.1.2. Define your plug-in class

GIMP needs to knows what functions are available, what functionality they support, and what menu location to use. For that we define a class that is derived from the Gimp.PlugIn class.

A minimal plug-in need at least the following functions defined in this class:

- A do_query_procedure method, that GIMP calls to find out the names of the procedures that can be called in this plug-in.
- A do set i18n method, that GIMP calls to find out if your plug-in supports translations.
- A do_create_procedure method, which GIMP calls to start one of your plug-ins functions. When this is called
 you should initialize certain information for GIMP. You start by creating a procedure that tells GIMP the name
 of the Python function to call to start your plug-in. Then you supply additional information, like what types of
 image does your plug-in support, where in the menu should your plug-in be found, and other optional
 settings.
- The actual function (called procedure by GIMP) that you specified above. We often call this run, but it can
 have any name allowed by Python. This function is where you will add your own code to apply your desired
 effects.

We will go into a little more detail now. Not included below is the first part of the Python code that was shown above. This only shows the basic layout of your class.

```
class MyFirstPlugin (Gimp.PlugIn):
    def do query procedures(self):
        return [ "jb-plug-in-first-try" ]
    def do_set_i18n (self, name):
       return False
    def do_create_procedure(self, name):
       procedure = Gimp.ImageProcedure.new(self, name,
                                            Gimp.PDBProcType.PLUGIN,
                                            self.run, None)
       procedure.set image types("*")
       procedure.set menu label("My first Python plug-in")
       procedure.add_menu_path('<Image>/Filters/Tutorial/')
       procedure.set_documentation("My first Python plug-in tryout",
                                    "My first Python 3 plug-in for GIMP 3",
                                    name)
       procedure.set_attribution("Your name", "Your name", "2023")
       return procedure
```

```
def run(self, procedure, run_mode, image, drawables, config, run_data):
    Gimp.message("Hello world!")
# do what you want to do, then, in case of success, return:
    return procedure.new_return_values(Gimp.PDBStatusType.SUCCESS, GLib.Error())
```

Let's take a closer look at do_create_procedures. In the line return ["jb-plug-in-first-try"] we tell GIMP what the name of our procedure is: we call it "jb-plug-in-first-try". This is the name that will be shown in GIMP's Procedure Browser.

You can have more than one procedure defined in a plug-in. In that case, you would list all names, separated by a comma.

It is good practice to start all your procedures with your initials or some other recognizable and unique tag. This way, it is less likely that your name will be the same as someone elses plug-in, which may confuse GIMP. Besides that, you are free to name it the way you like.

Next we tell GIMP that we don't support translations by returning False in the call to do_set_i18n. What to do when you want your plug-in to be translated is beyond the scope of this tutorial.

The do create procedure method is where most of the initializing for GIMP is done.

Procedure 13.1. Setting up do_create_procedure

1. If you define more than one procedure in your plug-in, you first need to check the "name" parameter to see which procedure is being called by GIMP. We won't go into that here.

To initialize your plug-in procedure, we first need to create it and fill in the name of our Python function that will do the actual work. We do that by calling Gimp.ImageProcedure.new.

In this case we define the name of our plug-in as self.run. When we qualify our function with "self.", it means that it is a method inside our class. If you prefer, you can also define it as a regular function outside your class, in that case you would omit "self.". Naming it "run" is not required, you can give it any name that Python accepts.

- 2. Next we will tell GIMP what types of images this plug-in can work with by calling procedure.set_image_types. In case the type of image doesn't matter, we use "*", which means all types supported by GIMP. Other examples:
 - 1. "RGB*,GRAY*", where the "*" here means we support both the versions with and without A(Ipha) channel.
 - 2. "INDEXED", plug-in only works on indexed images, without alpha channel.
 - 3. "RGBA", plug-in only works on RGB image with alpha channel.
- 3. Being able to start your plug-in from GIMP's menu is usually a good idea. We start by defining a descriptive label for the menu entry: <u>procedure.set menu label</u>.
- 4. Followed by specifying where in the menu it should appear: <u>procedure.add_menu_path</u>. In this case we tell it to add our plug-in in the Filters menu, under the Tutorial category (submenu).
- 5. If you like you can also add an extra help tip, by using <u>procedure.set_documentation</u>, and you can set your name as author of the plug-in by using <u>procedure.set_attribution</u>.
- 6. The last line in create procedure is return procedure, which sends the information added above back to GIMP. Following this, GIMP will call your run procedure.

4.1.3. Adding the main entry point to your plug-in

Every plug-in gets started by a call to Gimp.main.

```
Gimp.main(MyFirstPlugin.__gtype__, sys.argv)
```

The only thing you need to change in this line for your plug-in, is the name of your plug-in class, here called "MyFirstPlugin".

4.1.4. The complete Python plug-in

Below we present the entire python script, which should run, provided it is given the correct name in a directory with the same name in a location that GIMP knows of. It will show the message "Hello world!" in the error console or in a popup dialog.

```
#!/usr/bin/env python3
# -*- coding: utf-8 -*-
    GIMP - The GNU Image Manipulation Program
    Copyright (C) 1995 Spencer Kimball and Peter Mattis
#
    gimp-tutorial-plug-in.py
#
    sample plug-in to illustrate the Python plug-in writing tutorial
    Copyright (C) 2023 Jacob Boerema
#
    This program is free software: you can redistribute it and/or modify
#
    it under the terms of the GNU General Public License as published by
#
    the Free Software Foundation; either version 3 of the License, or
    (at your option) any later version.
#
    This program is distributed in the hope that it will be useful,
#
    but WITHOUT ANY WARRANTY; without even the implied warranty of
   MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
   GNU General Public License for more details.
   You should have received a copy of the GNU General Public License
    along with this program. If not, see <a href="https://www.gnu.org/licenses/">https://www.gnu.org/licenses/>.</a>.
import sys
import gi
gi.require_version('Gimp', '3.0')
from gi.repository import Gimp
gi.require_version('GimpUi', '3.0')
from gi.repository import GimpUi
from gi.repository import GLib
class MyFirstPlugin (Gimp.PlugIn):
    def do_query_procedures(self):
        return [ "jb-plug-in-first-try" ]
    def do_set_i18n (self, name):
        return False
    def do create procedure(self, name):
        procedure = Gimp.ImageProcedure.new(self, name,
                                             Gimp.PDBProcType.PLUGIN,
                                             self.run, None)
        procedure.set image types("*")
        procedure.set menu label("My first Python plug-in")
        procedure.add_menu_path('<Image>/Filters/Tutorial/')
        procedure.set documentation("My first Python plug-in tryout",
                                     "My first Python 3 plug-in for GIMP 3.0",
                                     name)
        procedure.set_attribution("Your name", "Your name", "2023")
        return procedure
    def run(self, procedure, run_mode, image, drawables, config, run_data):
        Gimp.message("Hello world!")
        # do what you want to do, then, in case of success, return:
        return procedure.new_return_values(Gimp.PDBStatusType.SUCCESS, GLib.Error())
Gimp.main(MyFirstPlugin.__gtype__, sys.argv)
```



3.7. Your script and its working

1



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Part III. Function Reference

Part III. Function Reference





Part III. Function Reference

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4. A Python plug-in writing Tutorial



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1. The Toolbox

1.1. Introduction

GIMP provides a comprehensive toolbox in order to quickly perform basic tasks such as making selections or drawing paths. The many tools contained within GIMP's toolbox are discussed in detail here. (In case you're curious, in GIMP lingo a "tool" is a way of acting on an image that requires access to its display, either to let you indicate what you want to do by moving the pointer around inside the display, or to show you interactively the results of changes that you have made. But if you want to think of a tool as a saw, and an image as a piece of wood, it probably won't do you a great deal of harm.)



Note

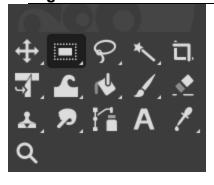
See <u>Main Windows: The Toolbox</u> for an overview of the toolbox and its components.

GIMP has a diverse assortment of tools that let you perform a large variety of tasks. The tools can be thought of as falling into the following categories:

- Selection tools, which specify or modify the portion of the image that will be affected by subsequent actions;
- Paint tools, which alter the colors in some part of the image;
- *Transform tools*, which alter the geometry of the image;
- Color tools, which alter the colors in the image as a whole;
- Other tools, which don't fall into the other categories.

1.2. Tool Icons

Figure 14.1. The Tool Icons in the Toolbox

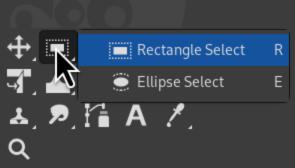


Most tools can be activated by clicking on an icon in the Toolbox. By default, some tools are accessible only via the menus. Every tool can be activated from the Tools menu (or the Colors menu for some color tools). Most tools can also be activated from the keyboard using an accelerator key.

In the default setup, created when GIMP is first installed, not all tools show icons in the Toolbox: some tools are omitted. You can customize the set of tools that are shown in the Toolbox Preferences.

There are two reasons you might want to do this: first, if you only rarely use a tool, it might be easier to find the tools you want if the distracting icon is removed; second, if you use tools that are not found in the toolbox by default, you might find it convenient to have icons for them easily available. In any case, you can always access any tool at any time using the Tools or Colors menu from the main menu.

Tool icons are grouped by default. Tool groups are marked with a small dark triangle at the bottom right corner of the icon. The group icon displayed is the last used tool in the group. Right click on the group icon to display the list of tools in the group.



You can get all tools displayed by unchecking the Use tool groups option in <u>Section 6.13, "Toolbox"</u>. By default, the shape of the pointer changes when it is inside an image, to a shape that indicates which tool is active. You can change this behavior in the Pointers section of the <u>Input Devices settings</u>.

1.3. Color and Indicator Area

1.3.1. Foreground/Background Colors Area

Figure 14.2. Foreground/Background Colors Area in the Toolbox



The Foreground/Background Colors area, marked with (3)

Color area

The color area shows GIMP's current foreground and background colors, which are used for painting, filling, and many other operations. Clicking on either one of them brings up a color selector dialog that allows you to change to a different color.

Default colors

Clicking on the small symbol in the lower left corner resets the foreground and background colors to black and white. Pressing the $\boxed{\mathbf{D}}$ key has the same effect.

Swap Foreground/Background colors

Clicking on the double-headed arrow symbol swaps the foreground and background colors. Pressing the **X** key has the same effect.



Tip

You can click-and-drag one of these colors directly into a layer: it will fill the whole layer.

1.3.2. Brush/Pattern/Gradient Area

Figure 14.3. Active Brush, Pattern and Gradient Area in the Toolbox



The Active Brush, Pattern and Gradient area, marked with (4)

By default, this area is not displayed. You can add this area through Edit \rightarrow Preferences \rightarrow Toolbox: Section 6.13, "Toolbox".

This part of the Toolbox shows the currently selected brush, pattern, and gradient. Clicking on any of them brings up a dialog that allows you to change it.

1.3.3. Active Image Area

Figure 14.4. Active Image Area in the Toolbox



The Active Image area, marked with (5)

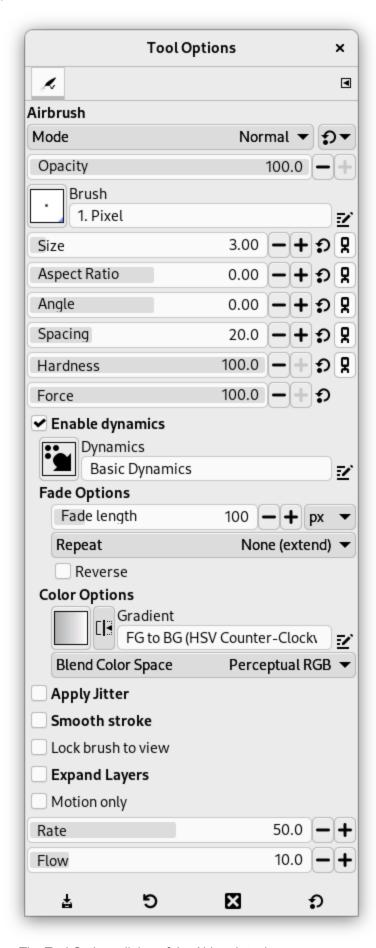
By default, this area is not displayed. You can add this area through Edit \rightarrow Preferences \rightarrow Toolbox: Section 6.13, "Toolbox".

A thumbnail of the active image is displayed in this area. If you click on this thumbnail, the <u>Images dialog</u> is opened. This can be useful if you have many images on your screen.

If you use GIMP on a Unix-like operating system with the X Window System, you can also drag and drop the thumbnail to an enabled XDS file manager to directly save the corresponding image.

1.4. Tool Options

Figure 14.5. Tool Options Dialog



The Tool Options dialog of the Airbrush tool.

If you have things set up like most people do, activating a tool causes its Tool Options dialog to appear below the Toolbox. If you don't have things set up this way, you probably should: it is very difficult to use tools effectively without being able to manipulate their options.



Tip

The Tool Options appear beneath the Toolbox in the default setup. If you lose it somehow, you can get it back by creating a new Tool Options dialog using Windows \rightarrow Dockable Dialogs \rightarrow Tool Options and then docking it below the Toolbox. See the section on <u>Dialogs and Docking</u> if you need help.

Each tool has its own specific set of options. The choices you make for them are kept throughout the session, until you change them. In fact, the tool options are maintained from session to session. The persistence of tool options across sessions can sometimes be an annoying nuisance: a tool behaves very strangely, and you can't figure out why until you remember that you were using some unusual option the last time you worked with it, two weeks ago. At the bottom of the Tool Options dialog, four buttons appear:

This button allows you to save the settings for the current tool, so that you can restore them later. It brings up the <u>Section 7.2, "Tool Presets Dialog"</u> allowing you to give a name for the new preset. When you Restore options, only saved presets for the active tool are shown, so you need not worry about including the name of the tool when you assign a name here.

5 Restore Tool Preset...

This button allows you to restore a previously saved preset of options for the active tool. If no presets have ever been saved for the active tool, the button will be disabled. Otherwise, clicking it will bring up a menu showing the names of all saved option sets: choosing a menu entry will apply those settings.

➤ Delete Tool Preset

This button allows you to delete a previously saved set of options for the active tool. If no option-sets have ever been saved for the active tool, the button will simply repeat the tool name. Otherwise, clicking it will bring up a menu showing the names of all saved presets: the selected preset will be deleted.

Reset to default values

This button resets the options for the active tool to their default values. If you hold the **Shift** key while pressing the Reset button, the options for all tools will be reset to their default values.

In addition to the commands for the above buttons, the Tool Options tab menu has an extra submenu:

Edit Tool Preset

This submenu shows a list of presets for the active tool that you can edit. Selecting one of them will open the <u>Tool Presets Editor</u> with that tool preset loaded. From there you can edit the preset, unless it is one of the default presets that come with GIMP.

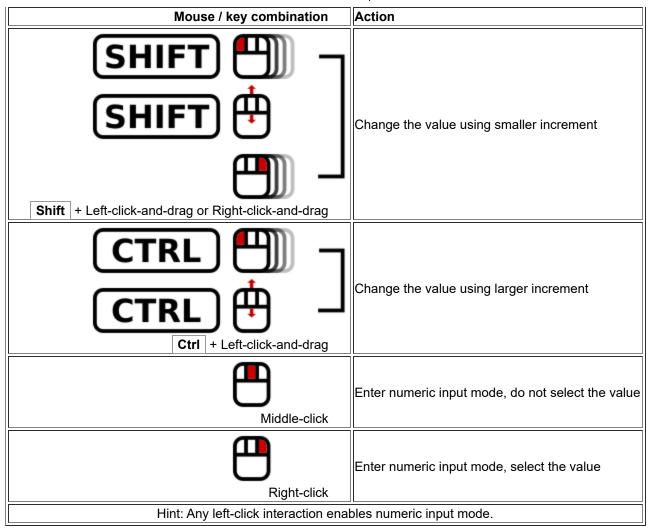
Below we will explain the interaction with sliders and the mouse scroll-wheel.

New sliders

You can use multiple modifiers with either left-click or mouse wheel scrolling:

Table 14.1. Interaction with the Slider Widget

Mouse / key combination	Action
Left-click	Change the value to what's under the pointer
Left-click-and-drag	Change the value using the default increment



Once you have set the value approximately, you can tune it precisely using the two small arrow buttons at the right of the slider.

The value area in the slider area works as a text editor: there, you can edit the value or enter a new value directly.

For some options, you can drag the pointer outside the tool dialog. For example with the size slider, you can get the maximum value (10000) so.

Mouse Scroll-Wheel actions on canvas

When using tools, you can use the mouse scroll-wheel, in combination with various modifiers, to do useful things with the tool options of the selected tool:

- Alt + Mouse-wheel: increase/decrease opacity
- Shift + Primary + Mouse-wheel: increase/decrease aspect ratio
- Shift + Alt + Mouse-wheel: increase/decrease angle
- Primary + Alt + Mouse-wheel: increase/decrease size
- Shift + Primary + Alt + Mouse-wheel: increase/decrease spacing

Note: the | Primary | modifier is usually | Ctrl | or | Cmd |, depending on your platform.



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2. Selection Tools



Chapter 14. Tools



2. Selection Tools

To access these tools, select Tools \rightarrow Selection Tools from the main menu.

2.1. Common Features

Selection tools are designed to select regions from the active layer so you can work on them without affecting the unselected areas. Each tool has its own individual properties, but the selection tools also share a number of options and features in common. These common features are described here; the variations are explained in the following sections for each tool specifically. If you need help with what a "selection" is in GIMP, and how it works, see Selection.

This category includes the following tools:

- the Rectangle Select;
- the Ellipse Select;
- the Free Select (the Lasso);
- the Foreground Select;
- the Fuzzy Select (Select Contiguous Regions);
- the By Color Select and
- the <u>Scissors Select (Select Shapes from Image)</u>.

In some ways the Path tool can also be thought of as a selection tool: any closed path can be converted into a selection. It also can do a great deal more, though, and does not share the same set of options with the other selection tools.

2.1.1. Key modifiers

The behavior of selection tools is modified if you hold down the **Ctrl**, **Shift**, and/or **Alt** keys while you use them



Note

Advanced users find the modifier keys very valuable, but novice users often find them confusing. Fortunately, it is possible for most purposes to use the Mode buttons (described below) instead of modifier keys.

Ctrl

When creating a selection, holding down the **Ctrl** key can have two different actions according to the way you use it:

- Holding down the key *while drawing* the selection toggles the "Expand from center" option.
- If you hold down the Ctrl key before drawing a selection, this new selection switches to the Subtract mode. So, this new selection will be subtracted from an existing one as soon as you release the click, as far as they have common pixels.

Alt

Holding Alt will allow movement of the current selection (only its frame, not its content). If the whole image is moved instead of the selection only, try Shift + Alt . Note that the Alt key is sometimes intercepted by the windowing system (meaning that GIMP never knows that it was pressed), so this may not work for everybody.

Shift

When creating a selection, holding down the **Shift** key can have two different actions according to the way you use it:

• If you hold down the key *before clicking* to start the selection, this selection will be in *Addition* mode as long as you press the key.

3/28/25, 12:23 PM 2. Selection Tools

• If you hold down the **Shift** key *after clicking* to start the selection, the effect will depend on the tool you are using: for example, the selection will be a square with the Rectangle Select tool.

Ctrl + Shift

Using Ctrl + Shift together can do a variety of things, depending on which tool is used. Common to all selection tools is that the selection mode will be switched to intersection, so that after the operation is finished, the selection will consist of the intersection of the region traced out with the pre-existing selection. It is an exercise for the reader to play with the various combinations available when performing selections while holding Ctrl + Shift and releasing either both or either prior to releasing the mouse Left Button.

Key modifiers to move selections

Ctrl + Alt + Left-click-and-drag and Shift + Alt + Left-click-and-drag are used to move selections. See Section 2.1, "Moving or Resizing a Selection".

Space bar

Pressing the **Space** bar while using a selection tool transforms this tool into the Navigation cross as long as you press the bar, allowing you to pan around the image instead of using the scroll-bars when your image is bigger than the canvas. This is the default option: in the <u>Image Windows preferences</u> you can toggle the Space bar to the Move tool.

2.1.2. Options

Here we describe the tool options that apply to all selection tools: options that apply only to some tools, or that affect each tool differently, are described in the sections devoted to the individual tools. The current settings for these options can be seen in the Tool Options dialog, which you should always have visible when you are using tools. To make the interface consistent, the same options are presented for all selection tools, even though some of them don't have any effect for some of the tools.

Mode

This determines the way that the selection you create is combined with any pre-existing selection. Note that the functions performed by these buttons can be duplicated using modifier keys, as described above. For the most part, advanced users use the modifier keys; novice users find the mode buttons easier.



Replace mode will cause any existing selection to be destroyed or replaced when the new selection is created.

Add

Add mode will cause the new selection to be added to any existing selection regions.

Subtract

Subtract mode will remove the new selection area from any existing selection regions.

Intersect

Intersection mode will make a new selection from the area where the existing selection region and the new selection region overlap.

Antialiasing

This option only affects some selection tools: it causes the boundary of the selection to be drawn more smoothly.

Feather Edges

This options allows the boundary of the selection to be blurred, so that points near the boundary are only partially selected. For further information regarding feathering, see the glossary entry <u>Feathering</u>. When this option is checked, a Radius option appears. Default value is 10 pixels: higher image resolution, higher radius.







Chapter 14. Tools



2.2. Rectangle Selection

2.2. Rectangle Selection



2. Selection Tools



2.2. Rectangle Selection

The Rectangle Selection tool is designed to select rectangular regions of the active layer: it is the most basic of the selection tools, but very commonly used. For information on selections and how they are used in GIMP see <u>Selections</u>; for information on features common to all selection tools see <u>Selection Tools</u>.

This tool is also used for rendering a rectangle on an image. To render a filled rectangle, create a rectangular selection, and then fill it using the <u>Bucket Fill tool</u>. To create a rectangular outline, the simplest and most flexible approach is to create a rectangular selection and then <u>stroke</u> it.

2.2.1. Activating the Tool

There are different possibilities to activate the tool:

- From the main menu: Tools → Selection Tools → Rectangle Select.
- By clicking the tool icon in the Toolbox.
- By pressing the R keyboard shortcut.

2.2.2. Key modifiers



Note

See <u>Selection Tools</u> for help with modifier keys that affect all these tools in the same way. Only effects options that are specific to this tool are explained here.

Ctrl

Pressing the Ctrl key after starting your selection, and holding it down until you are finished, causes your starting point to be used as the center of the selected rectangle, instead of a corner. Note that if you press the Ctrl key before starting to make the selection, the resulting selection will be subtracted from the existing selection. The

cursor becomes

Shift

If you press the Shift key before starting the selection, the resulting selection will be added to the existing one.

The cursor becomes | D

Pressing the Shift key after starting your selection, toggles the Fixed option, and holding it down until you are finished, will constrain the selection to a square, if it is your first selection. Later, with the default Aspect Ratio, your selection will respect the aspect ratio of the previous selection.

Ctrl + Shift

Pressing both keys after starting your selection combines the two effects, giving you a square selection centered on your starting point. Note that pressing these keys before starting your selection intersects the resulting selection

with the existing one and the pointer change shape accordingly:

2.2.3. Tool manipulation

Figure 14.6. Example of Rectangle Selection.



When this tool is selected the mouse pointer is displayed like this: as soon as it is over the image. A drag and drop allows to get a rectangular (or square) shape. When the mouse button is relaxed, a dotted line (<u>"marching ants"</u>) outlines the selection. It's not necessary to adjust the selection with care; you can resize it easily later. When the pointer is moving on the canvas, the pointer and selection aspects change:

- outside the selection it looks like previously; this allows to design a new selection but will erase the existing one if this isn't combined with an action on the relevant key to add or subtract another selection as described in the previous paragraph.
- within selection peripheral parts, the mouse pointer changes into various shapes when overflying rectangular sensitive and clearly marked areas. These *handles* allow you to resize the selection. In selection corners the pointer

changes into a shape according to the context; for instance in the low right corner it becomes: So, by click-and-dragging these areas, you can magnify or shrink the selection size. Over median selection parts, lateral, low or up, pointer is changed into appropriate shapes according to the context. For instance, when the mouse pointer is over the

median right side, the pointer looks like: So you can click-and-drag to magnify or to shrink the selection size by moving the chosen boundary.

- inside selection central area the mouse pointer looks like usual for object manipulation, i.e.:

. So you can move the whole selection by a click-and-drag.

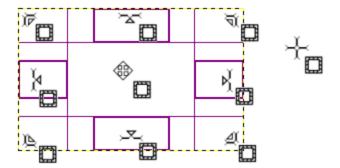
Moreover, if you have not unchecked the Highlight option, your work will be easier because what is out the selection will be darkest than what is in the selection, and then the selection seems highlighted.



qiT

If you use moving keys you can move the selection or modify its size by one pixel step. If you use it in combination with Shift you can move it by a 25 pixel step.

Figure 14.7. Sensitive selection areas

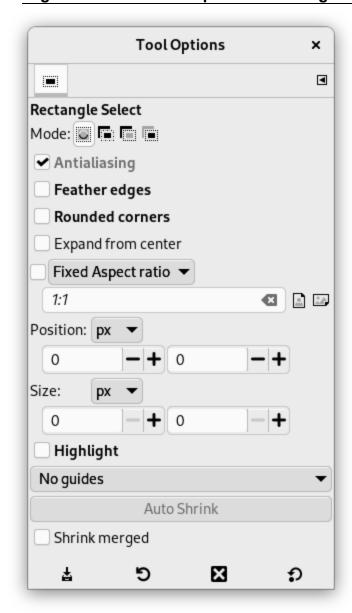


Display of all possible pointers in function of their localization with respect to the selection area.

After creating and modifying the selection, you will have to exit this editing mode (and commit any changes). You can do this with a single click inside the selection or by pressing the **Enter** key. Or you can just use a non-selection tool and, for example, fill or paint the selection.

2.2.4. Options

Figure 14.8. Tool Options Dialog



Normally, tool options are displayed in a window attached under the Toolbox as soon as you activate a tool. If they are not, you can access them from the main menu through Windows \rightarrow Dockable Windows \rightarrow Tool Options which opens the option window of the selected tool. The available tool options can also be accessed by double clicking the corresponding tool icon in the Toolbox.

Mode, Antialiasing, Feather edges



Note

See <u>Selection Tools Options</u> for help with options that are common to all these tools. Only options that are specific to this tool are explained here.

Rounded corners

If you enable this option, a slider appears. You can use this to adjust the radius that is used to round the corners of the selection.

Expand from center

If you enable this option, the point the selection is started by pressing the mouse button is used as center of the selected area.

Fixed

This menu allows you the option of constraining the shape of the rectangle in different ways.

Aspect ratio

This option allows you to design and resize the selection while keeping the aspect ratio fixed and written within the relevant box. By default the ratio is 1:1 (so we have a square) but it can be changed. With the two little landscape and picture icons, you can invert this ratio.

Width

With this choice you can fix the width of the selection.

Height

With this choice you can fix the height of the selection.

Size

With this choice you can fix the width and height of the selection.

Position

These two text fields contain the current horizontal and vertical coordinates of the upper left corner of the selection. You can use these fields to adjust the selection position precisely.

Size

These two text fields contain the current width and height of the selection. You can use these fields to adjust the selection size precisely.

Highlight

If you enable this option, the selected area is emphasized by a surrounding mask to make visual selection much easier.

Guides

With this menu you can select the type of guides that is shown within the selection to make the creation of a selection easier, respecting *Photo composition rules*. Six options are available:

- No Guides
- Center lines
- Rule of thirds
- Rule of fifths
- Golden sections
- Diagonal lines

Auto Shrink

This option is active when a rectangle selection is drawn. Clicking on the Auto Shrink Selection button will make the selection automatically shrink to the nearest rectangular shape including elements in the selection. The algorithm for finding the best rectangle to shrink to is "intelligent", which in this case means that it sometimes does surprisingly sophisticated things, and sometimes does surprisingly strange things. In any case, if the region that you want to select has a solid-colored surround, auto-shrinking will always pick it out correctly. Note that the resulting selection does not need to have the same shape as the one you sweep out.

Figure 14.9. Auto Shrink example

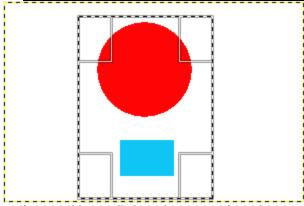
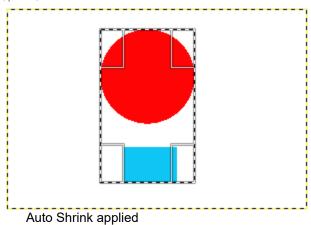


Image with two distinct elements selected



Shrink merged

If Sample Merged is also enabled, then Auto Shrink will use the pixel information from the visible display of the image, rather than just from the active layer.

For more information, see the Glossary entry.







2. Selection Tools



2.3. Ellipse Selection

2.3. Ellipse Selection



2. Selection Tools



2.3. Ellipse Selection

The Ellipse Selection tool is designed to select circular and elliptical regions from an image, with high-quality antialiasing if you want it. For information on selections and how they are used in GIMP see <u>Selections</u>; for information on features common to all selection tools see <u>Selection Tools</u>.

This tool is also used for rendering a circle or ellipse on an image. To render a filled ellipse, create an elliptical selection, and then fill it using the <u>Bucket Fill tool</u>. To create an elliptical outline, the simplest and most flexible approach is to create an elliptical selection and then <u>stroke</u> it. However, the quality of anti-aliasing with this approach is rather crude. A higher quality outline can be obtained by creating two elliptical selections with different sizes, subtracting the inner one from the outer one; however this is not always easy to get right. The command Select \rightarrow Border... makes it easy.

2.3.1. Activating the Tool

There are different possibilities to activate the tool:

- From the main menu: Tools \rightarrow Selection Tools \rightarrow Ellipse Select.
- By clicking the tool icon in the Toolbox.
- By pressing the | E | keyboard shortcut.

2.3.2. Key modifiers



Note

See <u>Selection Tools</u> for help with modifier keys that affect all these tools in the same way. Only effects options that are specific to this tool are explained here.

Ctrl

Pressing the key after starting your selection, and holding it down until you are finished, causes your starting point to be used as the center of the selected ellipse, instead of a corner of the rectangle that may contain it. Note that if you press the **Ctrl** key *before* starting to make the selection, the resulting selection will be subtracted from the existing selection.

Shift

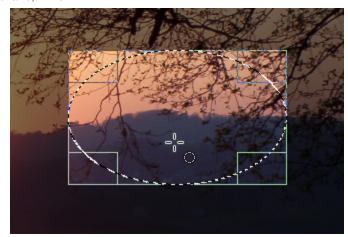
Pressing the **Shift** key after starting your selection, and holding it down until you are finished, constrains the selection to be a circle. Note that if you press the **Shift** key *before* starting to make the selection, the resulting selection will be added to the existing selection.

Ctrl + Shift

Pressing both keys combines the two effects, giving you a circular selection centered on your starting point.

2.3.3. Tool handling

Figure 14.10. Example of Ellipse Selection.

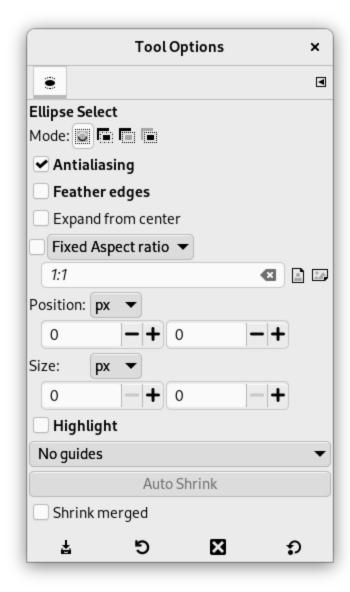


When this tool is selected the mouse pointer comes with a circle icon as soon as it is over the image. A drag-and-drop allows you to get an ellipse (or a circle) within a rectangular box. When the mouse button is relaxed, a dotted line (<u>"marching ants"</u>) outlines the elliptic selection. It's not necessary to adjust the selection with care; you can resize it easily later.

When the pointer is moving on the canvas, the pointer and selection aspects change. You can change the size of the selection by using handles. See <u>Tool handling</u> within the rectangular chapter.

2.3.4. Options

Figure 14.11. Tool Options Dialog



Normally, tool options are displayed in a window attached under the Toolbox as soon as you activate a tool. If they are not, you can access them from the main menu through Windows \rightarrow Dockable Windows \rightarrow Tool Options which opens the option window of the selected tool. The available tool options can also be accessed by double clicking the corresponding tool icon in the Toolbox.

Mode, Antialiasing, Feather edges



Note

See <u>Selection Tools Options</u> for help with options that are common to all these tools. Only options that are specific to this tool are explained here.

Expand from center, Fixed, Position, Size, Highlight, Guides, Auto Shrink, Shrink merged
These options work exactly the same way they are described for the Rectangle Selection tool. See Section 2.2.4,
"Options" for details.







2.2. Rectangle Selection



2.4. Free Selection (Lasso)

2.4. Free Selection (Lasso)



2. Selection Tools



2.4. Free Selection (Lasso)

The Free Selection tool, lets you create a selection by drawing it with the pointer.

You can use this tool in two ways. First create the starting point by clicking on your image. Then:

- Keep the mouse button pressed (i.e click-and-drag), drag to draw a freehand selection. When the end point is on top of the starting point, release the mouse button to close the selection.
 - If you click on the end point, it turns accompanied by a moving cross. Then, dragging enlarges the shape.
- Or release the mouse button and drag to draw a polygonal selection. When the end point is on top of the starting point, click to close the selection.
 - Press the Ctrl key and click on the end point: moving the mouse pointer forces moving angles to 15°; so, you can draw horizontal or vertical lines easily.

In both cases, double clicking on the end point closes the selection with a straight line.

In polygonal mode, this selection is a *preliminary selection*; ants are marching, but the small yellow circle is still present: you can copy the selection and, pressing the **Backspace** key, you return to the previous selection step (reopen the shape), and you can edit the selection.

Press | **Enter** | or double click inside the shape to *validate the selection*.

Pressing and releasing the mouse pointer allows you to mix free hand *segments* and polygonal segments. You can go outside the edge of the image display and come back in if you want to.

Free Select is often a good tool to use for "roughing in" a selection; it is not so good for precise definition. Experienced users find that it is often convenient to begin with the Free Select tool, but then switch to Quick Mask mode for detail work.

For information on selections and how they are used in GIMP see <u>Selections</u>. For information on features common to all selection tools see <u>Selection Tools</u>.



Note

The Free Selection tool is much easier to use with a tablet than with a mouse.

Figure 14.12. Mixing free hand segments and polygonal segments



2.4.1. Activating the Tool

There are different possibilities to activate the tool:

- From the main menu: Tools → Selection Tools → Free Select.
- By clicking the tool icon $\mathcal P$ in the Toolbox.
- By pressing the | F | keyboard shortcut.

2.4.2. Key modifiers

The Free Select tool has key modifiers that affect all selection tools in the same way. See <u>Selection Tools</u> for help with these

Backspace returns to previous selection step (removes last selection segment), **Escape** cancels all selection segments.

2.4.3. Tool handling

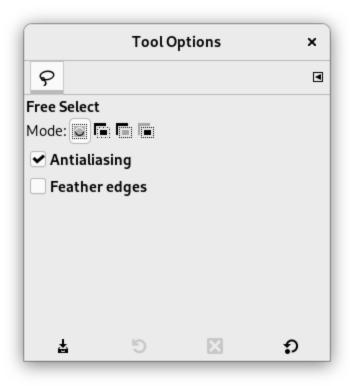
To move the selection, see **Moving selections**.

Figure 14.13. Rough selection with the Free Selection tool.



2.4.4. **Options**

Figure 14.14. Tool Options Dialog



Normally, tool options are displayed in a window attached under the Toolbox as soon as you activate a tool. If they are not, you can access them from the main menu through Windows \rightarrow Dockable Windows \rightarrow Tool Options which opens the option window of the selected tool. The available tool options can also be accessed by double clicking the corresponding tool icon in the Toolbox.

Mode, Antialiasing, Feather edges



Note

See <u>Selection Tools Options</u> for help with options that are common to all these tools. Only options that are specific to this tool are explained here.

Marching ants come with a continuous line, meaning that the selection is not validated yet and that you can still change the selection shape (mouse pointer comes with the Move icon). But you can't use (holding it pressed) Shift | Ctrl yet. You have to hit the Enter key. Then you can use (holding them pressed) Shift to add a selection, Ctrl to subtract a selection, Shift + Ctrl to intersect two selections. When you are satisfied with your changes, hit Enter key to validate the selection.







2.3. Ellipse Selection



2.5. Foreground Select

2.5. Foreground Select



2. Selection Tools



2.5. Foreground Select

This tool lets you extract the foreground from the active layer or from a selection. After the selection is made, with its <u>marching ants</u>, you can copy-paste or click-and-drag it to another image used as background, and, inverting the selection, you can make changes in background.

2.5.1. Activating the Tool

There are different possibilities to activate the tool:

- From the main menu: Tools → Selection Tools → Foreground Select.
- By clicking the tool icon in the Toolbox.
- This tool has no shortcut, but you can set one using Edit → Keyboard Shortcuts, open the Tools group on the left, select Foreground Select and then press the keys you want to use as shortcut.

2.5.2. Directions for use

Let us start with an object that is easy to distinguish from the background and doesn't need to be refined.



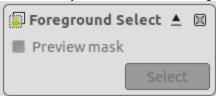
Warning

The foreground select tool needs a lot of memory for its processing, depending on the size of the image. It is known to crash or slow down when using larger images.

One way to improve this is to use Matting Global instead of Matting Levin. The slow processing speed can be improved by increasing the number of downsampled Levels, at the cost of using more memory. Both of these options also come with the disadvantage of being less accurate.

1. The way it works is similar to the <u>Free Select tool</u>. Roughly select the object you want to extract, with a little bit of background around it. To get a more accurate outline, keep the mouse button pressed while moving. To use straight lines for parts of your selection, click and release the button between the start and end points of the straight section.

As soon you click to start drawing the selection, a small window pops up:



Before the selection is finished, only the button to close the <u>dialog</u> is active, allowing you to cancel and return to the original image (this can also be done by pressing the **Esc** key).

To finish the initial selection, it needs to be closed. When the mouse cursor hovers over the dot where you started the selection, it turns yellow. Click this to close the selection. Instead of doing that, you can also double-click to close the selection.



The selection is closed.

2. To create the mask from your selection, press | **Enter** |, or double-click inside the selection:



The mouse pointer now changes into a Paintbrush icon with a circle. The dark blue area (this color can be changed) shows the background. The lighter area covers the zone you have selected as foreground and a small part of background. Outside the selected area, the dark blue area is called the "Unknown pixels area". The options in the small window on top of the image become active:

- A Preview mask checkbox that toggles <u>displaying</u> a preview of the foreground extraction status. The same can also be done by pressing the **Enter** key.
- A Select button that will be used to create the extraction after marking the foreground.
- 3. Now we start the actual foreground extraction process: draw a line through the foreground. The size of the brush can be changed in the Tool Options area. Draw a continuous line over the selected foreground area moving over colors which will be kept for the extraction. The color used to draw the line is not important, but not using the same color as the foreground makes it easier to see. Be careful not to paint background pixels. With this one-color object, that is easy to distinguish from the background, a few strokes are enough:



4. Toggle the preview button, or press **Enter** to verify the result.



note

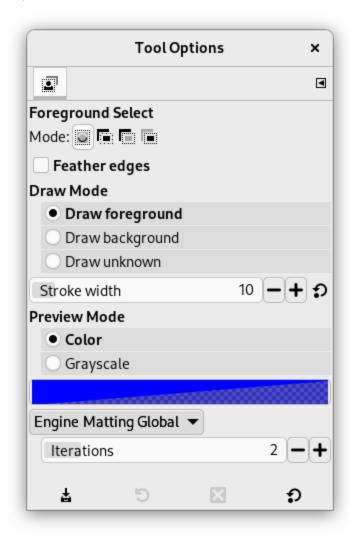
Note

You can draw directly on this Preview mask and see the result immediately.

5. When you are satisfied with the result, click the Select button, or press **Enter** to finalize the selection and finish the foreground selection operation. You can cancel the operation by pressing **Esc**.

2.5.3. Options

Figure 14.15. Tool Options Dialog



Normally, tool options are displayed in a window attached under the Toolbox as soon as you activate a tool. If they are not, you can access them from the main menu through Windows \rightarrow Dockable Windows \rightarrow Tool Options which opens the option window of the selected tool. The available tool options can also be accessed by double clicking the corresponding tool icon in the Toolbox.

Mode, Feather edges



Note

See <u>Selection Tools Options</u> for help with options that are common to all these tools. Only options that are specific to this tool are explained here.

Draw mode

Draw foreground: when selecting with a brush, what you draw will be considered part of the foreground, i.e. included in the selection.

Draw background: when selecting with a brush, what you draw will be considered part of the background, i.e. it will be excluded from the selection.

Draw unknown: When drawing on the background, outside the initial selection, it marks the drawn pixels as belonging to the foreground.

Stroke width

The size of the brush to select with.

Preview mode

- Color (default): the color of the selection preview mask; the current color is shown in the color swatch. You can change the color by clicking on it.
- Grayscale: allows you to see the resulting mask in black and white. This preview is similar to a layer mask. It can be useful in images where foreground and background color are similar and difficult to distinguish.

Engine

This is the method that will be used to select the foreground. The default is Matting Levin, which usually gives the best results, but you can also try Matting global, especially if processing is slow and you are using larger images.

Levels (Matting Levin only

The number of downsampled levels to use. Higher numbers can improve processing speed at the cost of using more memory. The default is 2 levels.

Active levels (Matting Levin only)

The number of levels to perform solving. Higher numbers can increase the selection a bit at the cost of slowing down processing. Setting this number higher than Levels has no effect. The default is 2 active levels.

Iterations (Matting Global only)

Higher values may improve the result at the cost of being slower. The default is 2 iterations.

2.5.4. Refining Foreground Extraction

In a lot of images, distinguishing what is foreground or background can be difficult. Refining the selection allows you to extract these foregrounds. The procedure steps are the same as above, but, while drawing the foreground, you will often toggle Preview, use Zoom (+ key), switch to Draw background to delete unwanted background areas, and switch between Grayscale and Color preview mode.

Figure 14.16. "Draw background" Example



On the left: drawing foreground by mistake went over the background area: a part of the background will be included in the foreground selection!

In the middle: Draw background option is checked: draw on the unwanted background pixels.

On the right: unwanted selected pixels in the background are no longer in the foreground selection.

Figure 14.17. "Draw unknown" Example





On the left: the selection left a small part of the foreground unselected, in the unknown pixels area.

On the right: with Draw unknown option checked, draw on the unselected pixels to select them. This shows that they are now selected.



2.4. Free Selection (Lasso)

1

2.6. Fuzzy Selection (Magic wand)

2.6. Fuzzy Selection (Magic wand)



2. Selection Tools



2.6. Fuzzy Selection (Magic wand)

The Fuzzy Select tool is designed to select areas of the current layer or image based on color similarity. When using this tool, it is very important to pick the right starting point. If you select the wrong spot, you might get something very different from what you want, or even the opposite.

Fuzzy Select is a good tool for selecting objects with sharp edges. It is fun to use, so beginners often start out using it a lot. You will probably find, however, that the more you use it, the more frustrated you become with the difficulty of selecting exactly what you want, no more, no less. More experienced users find that the <u>Path</u> and <u>Color Select</u> tools are often more efficient, and use the Fuzzy Select tool less. Still, it is useful for selecting an area within a contour, or touching up imperfect selections. It often works very well for selecting a solid-colored (or nearly solid-colored) background area.

Note that as the selected area expands outward from the center, it does not only propagate to pixels that touch each other: it is consoled of impring ever small good depanding on Threshold only in the use of

Note that as the selected area expands outward from the center, it does not only propagate to pixels that touch each other: it is capable of jumping over small gaps, depending on Threshold option. To increase/decrease Threshold, during the use of Fuzzy Selection, after the first button-press, dragging the pointer downward (or to the right) or upward (or to the left).

2.6.1. Activating the Tool

There are different possibilities to activate the tool:

- From the main menu: Tools → Selection Tools → Fuzzy Select.
- By clicking the tool icon [™] in the Toolbox.
- By pressing the U keyboard shortcut.

2.6.2. Key modifiers

The Fuzzy Select tool does not have any special key modifiers, only the ones that affect all selection tools in the same way. See Section 2.1. "Common Features" for help with these.

2.6.3. Tool handling

Figure 14.18. Using the Fuzzy Select tool: selected pixels are contiguous

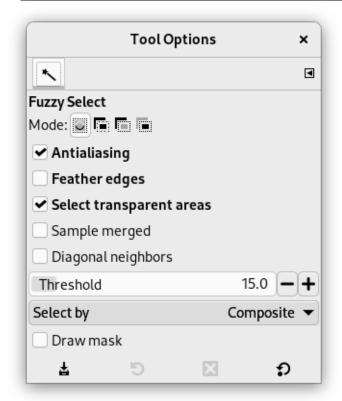


It starts selecting when you click at a spot in the image, and expands outwards like water flooding low-lying areas, selecting contiguous pixels whose colors are similar to the starting pixel. You can control the threshold of similarity by dragging the mouse downward or to the right: the farther you drag it, the larger you get the selected region. And you can reduce the selection by dragging upwards or to the left.

You can move the selection outline using | Alt | + arrow keys.

2.6.4. Options

Figure 14.19. Tool Options Dialog



Normally, tool options are displayed in a window attached under the Toolbox as soon as you activate a tool. If they are not, you can access them from the main menu through Windows \rightarrow Dockable Windows \rightarrow Tool Options which opens the option window of the selected tool. The available tool options can also be accessed by double clicking the corresponding tool icon in the Toolbox.

Mode, Antialiasing, Feather edges



Note

See <u>Selection Tools Options</u> for help with options that are common to all these tools. Only options that are specific to this tool are explained here.

Finding Similar Colors

These options affect the way Fuzzy Select expands the selection out from the initial point.

Select Transparent Areas

This option gives Fuzzy Select the ability to select areas that are completely transparent. If this option is not checked, transparent areas will never be included in the selection.

Sample Merged

If you enable this option, sampling is not calculated only from the values of the active layer, but from all visible layers. For more information, see the <u>Glossary entry</u>.

Diagonal Neighbors

When activated, the tool considers diagonally neighboring pixels as connected when calculating the affected area. In other words, instead of looking at the four orthogonal neighbors of each pixel, it looks at all eight pixels

Figure 14.20. Example for Diagonal Neighbors



A pixel with 4 orthogonal neighbors

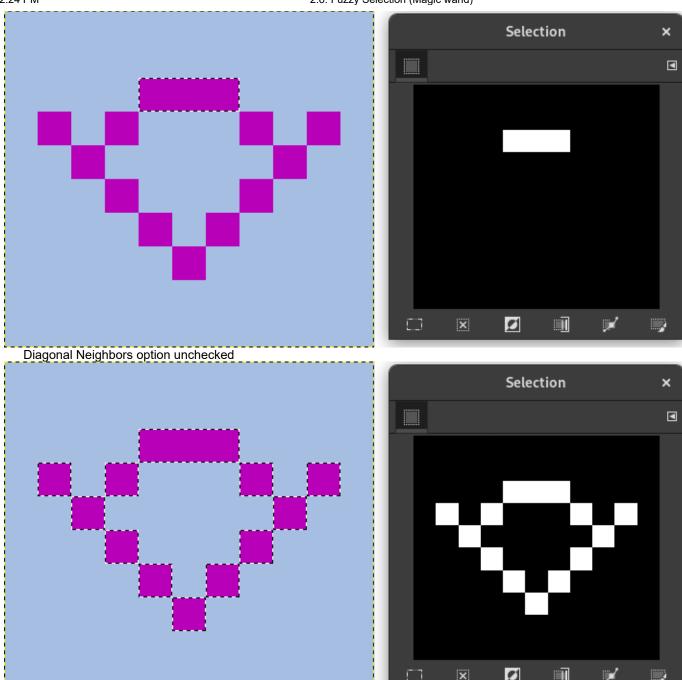


A pixel with 4 diagonal neighbors



A pixel with 8 neighbors

Figure 14.21. Example for Diagonal Neighbors option applied



Diagonal Neighbors option checked

Threshold

This slider determines the range of colors that will be selected at the moment you click the pointer on the initial point, before dragging it: the higher the threshold, the larger the resulting selection. After the first button-press, dragging the pointer downward or to the right will increase the size of the selection; dragging upward or to the left will decrease it. Thus, you have the same set of possibilities regardless of the Threshold setting: what differs is the amount of dragging you have to do to get the result you want.

Select by

This option determines which component of the image GIMP uses to calculate the similarity in color. You can choose from Composite, Red, Green, Blue, HSV Hue, HSV Saturation, HSV Value. LCh Lightness, LCh Chroma, LCh Hue, and Alpha.

Draw Mask

This option can help to visualize the selection. Selected areas marked with <u>marching ants</u> may not be evident when selecting with Fuzzy Select. If this option is checked, selected areas will be filled with a magenta color as long as you keep pressing on the left mouse button, and this mask will disappear as soon as you release this button.

Figure 14.22. Example for Draw mask option applied



Fuzzy Select used with Draw Mask option unchecked



Fuzzy Select used with Draw Mask option checked, left mouse button not released yet.



2.5. Foreground Select







2.7. Select By Color

2. Selection Tools



2.7. Select By Color

The Select by Color tool is designed to select areas of an image based on color similarity. It works a lot like the <u>Fuzzy Select</u> tool. The main difference between them is that the Fuzzy Select tool selects *contiguous* regions, with all parts connected to the starting point by paths containing no large gaps; while the Select by Color tool selects all pixels that are sufficiently similar in color to the pixel you click on, regardless of where they are located.

2.7.1. Activating the Tool

There are different possibilities to activate the tool:

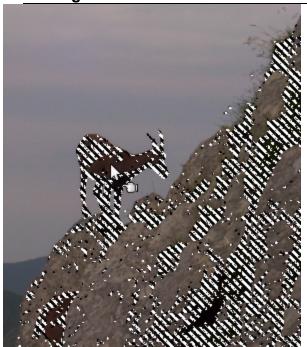
- From the main menu: Tools → Selection Tools → By Color Select.
- By clicking the tool icon in the Toolbox.
- By pressing the | Shift |+ O | keyboard shortcut.

2.7.2. Key modifiers

The select by color tool does not have any special key modifiers, only the ones that affect all selection tools in the same way. See <u>Selection Tools</u> for help with these.

2.7.3. Tool handling

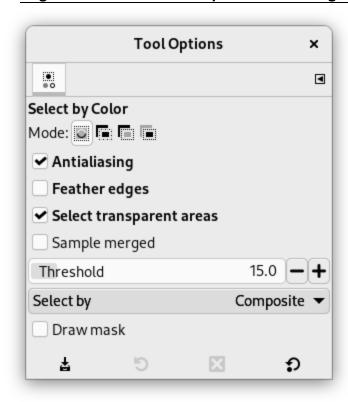
Figure 14.23. Using Select by Color tool: selected pixels are not only contiguous



As with the <u>Fuzzy Select</u> tool, the selection starts as soon as you click and the reference is the first clicked pixel. If you click and drag, you can change the threshold by the same way as with the Fuzzy Select tool. You can move the selection outline with the arrow keys, not with the mouse.

2.7.4. Options

Figure 14.24. Tool Options Dialog



Normally, tool options are displayed in a window attached under the Toolbox as soon as you activate a tool. If they are not, you can access them from the main menu through Windows → Dockable Windows → Tool Options which opens the option window of the selected tool. The available tool options can also be accessed by double clicking the corresponding tool icon in the Toolbox.

Mode, Antialiasing, Feather edges



Note

See Selection Tools Options for help with options that are common to all these tools. Only options that are specific to this tool are explained here.

Select transparent areas, Sample merged, Threshold, Select by, Draw mask

These options work exactly the same way they are described for the Fuzzy Select tool. See Section 2.6.4, "Options" for details.







2.6. Fuzzy Selection (Magic wand)



2.8. Scissors Select

3/28/25, 12:25 PM 2.8. Scissors Select

2.8. Scissors Select



2. Selection Tools



2.8. Scissors Select

The Scissors Select tool is an interesting piece of equipment: it has some features in common with Free Select, some features in common with the Path tool, and some features all its own. It is useful when you are trying to select a region defined by strong color-changes at the edges. To use the Scissors, you click to create a set of "control nodes", also referred to as anchors or control points, at the edges of the region you are trying to select. The tool produces a continuous curve passing through these control nodes, following any high-contrast edges it can find. If you are lucky, the path that the tool finds will correspond to the contour you are trying to select.

Unfortunately, there seem to be some problems with the edge-following logic for this tool, with the result that the selections it creates tend to be pretty crude in a lot of cases. A good way to clean them up is to switch to Quick Mask mode, and use paint tools to paint in the problematic parts. On the whole, most people find the Path tool to be more useful than the Scissors, because, even though it does not have the intelligent edge-finding capability, the paths it produces persist until you delete them, and can be altered at any time.

2.8.1. Activating the Tool

There are different possibilities to activate the tool:

- From the main menu: Tools → Selection Tools → Scissors Select.
- By clicking the tool icon **%** in the Toolbox.
- By pressing the | I | keyboard shortcut.

2.8.2. Key modifiers

The default behavior of the Shift, Ctrl, and Alt keys is described in Section 2.1.1, "Key modifiers" for all selection tools.

There is, however, one key modifier that has a special behavior if you use it while editing a selection, that is *after* you have added the first node:

Shift

By default, the *auto-edge snap feature* is enabled: whenever you click and drag the mouse pointer, the Scissors tool finds the point of the maximal gradient (where the color change is maximal) for placing a new control node or moving an existing node.

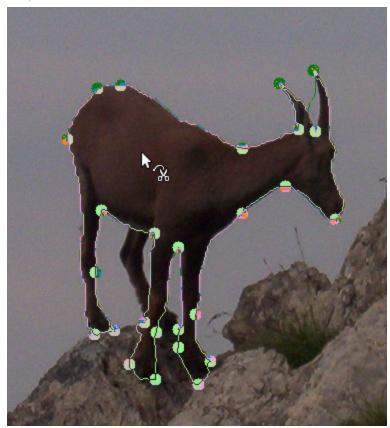
Holding down this key while clicking and dragging disables this feature, and the control node will be placed at the position of the mouse pointer.

Backspace removes last segment drawn, Escape cancels all selection segments.

2.8.3. Tool handling

Figure 14.25. Using Scissors Select

3/28/25, 12:25 PM 2.8. Scissors Select



Each time you left-click with the mouse, you create a new control point, which is connected to the last control point by a curve that tries to follow edges in the image. To finish, click on the first point (the cursor changes to indicate when you are in the right spot). You can adjust the curve by dragging the control nodes, or by clicking to create new control nodes. When you are satisfied, click anywhere inside the curve to convert it into a selection.

As said above when you click with this tool you drop points. The selection boundary is driven by these control points. During creation you can move each one by clicking and dragging, except the first and the last one. The selection is closed when you are clicking the last point over the first one. When the selection is closed the pointer shape changes

according to its position: inside , on the boundary , and outside . You can adjust the selection creating new points by clicking on the boundary or by moving each control points (merged first and last point). The selection is validated when you click inside.

You have to notice that you can get only one selection; if you create a second selection, the first one is erased when you validate the second one.



Warning

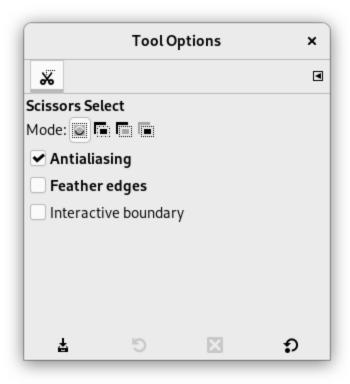
Be sure not to click inside the curve until you are completely done adjusting it. Once you have converted it into a selection, undoing takes you back to zero, and you will have to start constructing the curve again from scratch if you need to change it. Also be sure not to switch to a different tool, or again all of your carefully created control nodes will be lost. (But you still can transform your selection into a path and work it with the Path tool.)

To move the selection, see Moving selections.

2.8.4. Options

Figure 14.26. Tool Options Dialog

3/28/25, 12:25 PM 2.8. Scissors Select



Normally, tool options are displayed in a window attached under the Toolbox as soon as you activate a tool. If they are not, you can access them from the main menu through Windows \rightarrow Dockable Windows \rightarrow Tool Options which opens the option window of the selected tool. The available tool options can also be accessed by double clicking the corresponding tool icon in the Toolbox.

Mode, Antialiasing, Feather edges



Note

See <u>Selection Tools Options</u> for help with options that are common to all these tools. Only options that are specific to this tool are explained here.

Interactive boundary

If this option is enabled, dragging a control node during placement will indicate the path that will be taken by the selection boundary. If it is not enabled, the node will be shown connected to the previous node by a straight line while you are dragging it around, and you won't see the resulting path until you release the pointer button. On slow systems, if your control nodes are far apart, this may give a bit of a speed-up.







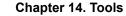
2.7. Select By Color



3. Paint Tools

3/28/25, 12:25 PM 3. Paint Tools

3. Paint Tools





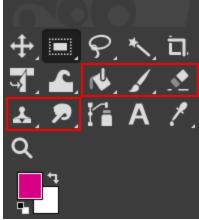
3. Paint Tools

To access these tools, select Tools \rightarrow Paint Tools from the main menu.

3.1. Common Features

The GIMP Toolbox includes fourteen "paint tools". By default they are shown together in five groups, but this can be disabled in <u>Toolbox Preferences</u> by unchecking Use tool groups.

Figure 14.27. The Paint Tools in the Toolbox



The default view groups similar tools together. The paint tools groups are inside the red square.



The paint tools in the toolbox in ungrouped view inside the red area.

The feature they all have in common is, that all of them are used by moving the pointer across the image display, creating brush-strokes. Five of them behave like the intuitive notion of "painting" with a brush. Pencil, Paintbrush,

Airbrush, and MyPaint brush are called "basic painting tools" or brush tools.

- The Pencil Tool.
- The Paintbrush Tool.
- The <u>Airbrush Tool</u>.
- The lnk tool.
- The MyPaint Brush Tool.

The other tools use a brush to modify an image in some way rather than paint on it:

- the Bucket Fill Tool fills with color or a pattern;
- the Gradient Tool fills with gradients;
- the <u>Eraser Tool</u> erases;
- the Clone Tool copies from a pattern, or image;
- the Heal Tool corrects small defects;
- the Perspective Clone Tool copies into a changed perspective;
- the <u>Blur/Sharpen Tool</u> blurs or sharpens;
- the <u>Smudge Tool</u> smears;
- and the <u>Dodge/Burn Tool</u> lightens or darkens.

The advantages of using GIMP with a tablet instead of a mouse probably show up more clearly for brush tools than anywhere else: the gain in fine control is invaluable. These tools also have special "Pressure sensitivity" options that are only usable with a tablet.

In addition to the more common "hands-on" method, it is possible to apply paint tools in an automated way, by creating a selection or path and then "stroking" it. You can choose to stroke with any of the paint tools, including nonstandard ones such as the Eraser, Smudge tool, etc., and any options you set for the tool will be applied. See the section on Stroking for more information.

3.1.1. Key modifiers

Ctrl

Holding down the Ctrl key has a special effect on every paint tool. For the Pencil, Paintbrush, Airbrush, Ink, and Eraser, it switches them into "color picker" mode, so that clicking on an image pixel causes GIMP's foreground to be set to the active layer's color at that point (or, for the Eraser, GIMP's background color). For the Clone tool, the Ctrl key switches it into a mode where clicking sets the reference point for copying. For the Blur/Sharpen tool, the Ctrl key switches between blur and sharpen modes; for the Dodge/Burn tool, it switches between dodging and burning.

Shift

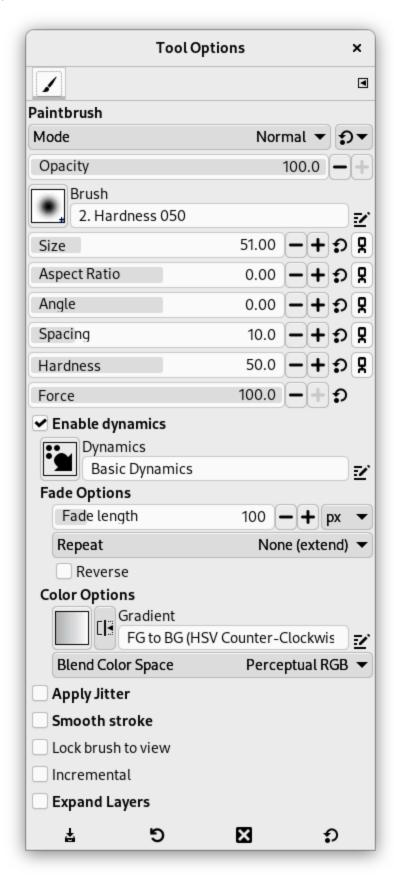
Holding down the **Shift** key has the same effect on most paint tools: it places the tool into *straight line* mode. To create a straight line with any of the paint tools, first click on the starting point, *then* press the **Shift** key. As long as you hold it down, you will see a thin line connecting the <u>previously</u> clicked point with the current pointer location. If you click again, while continuing to hold down the **Shift** key, a straight line will be rendered. You can continue this process to create a series of connected line segments.

Ctrl + Shift

Holding down both keys puts the tool into *constrained straight line* mode. This is similar to the effect of the **Shift** key alone, except that the orientation of the line is constrained to the nearest multiple of 15 degrees. Use this if you want to create perfect horizontal, vertical, or diagonal lines.

3.1.2. Options

Figure 14.28. Tool Options Dialog



Many tool options are shared by several paint tools: these are described here. Options that apply only to one specific tool, or to a small number of tools, are described in the sections devoted to those tools.

Mode

The Mode drop-down list provides a selection of paint application modes. As with the opacity, the easiest way to understand what the Mode setting does is to imagine that the paint is actually applied to a layer above the layer

you are working on, with the layer combination mode in the Layers dialog set to the selected mode. You can obtain a great variety of special effects in this way. The Mode option is only usable for tools that can be thought of as adding color to the image: the Pencil, Paintbrush, Airbrush, Ink, and Clone tools. For the other paint tools, the option is always disabled. A list of modes can be found in <u>Section 2, "Layer Modes"</u>. In this list, some modes are particular and are described below.

Opacity

The Opacity slider sets the transparency level for the brush operation. To understand how it works, imagine that instead of altering the active layer, the tool creates a transparent layer above the active layer and acts on that layer. Changing Opacity in the Tool Options has the same effect that changing opacity in the Layers dialog would have in the latter situation. It controls the "strength" of all paint tools, not just those that paint on the active layer. In the case of the Eraser, this can come across as a bit confusing: it works out that the higher the "opacity" is, the more transparency you get.

Brush

The brush determines how much of the image is affected by the tool, and how it is affected, when you trace out a brushstroke with the pointer. GIMP allows you to use several different types of brushes, which are described in the <u>Brushes</u> section. The same brush choices are available for all paint tools except the lnk tool, which uses a unique type of procedurally generated brush. The colors of a brush only come into play for tools where they are meaningful: the Pencil, Paintbrush, and Airbrush tools. For the other paint tools, only the intensity distribution of a brush is relevant.

Size

This option lets you to modify precisely the size of the brush. You can use the arrow keys to vary by ± 0.01 or the Page-Up and Page-Down keys to vary by ± 1.00 . You can obtain the same result if you have correctly set your mouse-wheel in the Preferences. See How to vary the size of a brush

Aspect Ratio

This determines the ratio between the height and the width of the brush. The slider is scaled from -20.00 to 20.00 with the default value set to 0.00. A negative value from 0.00 to -20 will narrow the height of the brush while a positive value between 0.00 and 20.00 indicates the narrowing rate of the width of the brush.

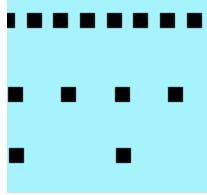
Angle

This option makes the brush turn round its center, clock-wise. This is visible if the brush is not circular or made from a rotated figure.

Spacing

This option sets the distance between the brush marks in a stroke.

Figure 14.29. Spacing option

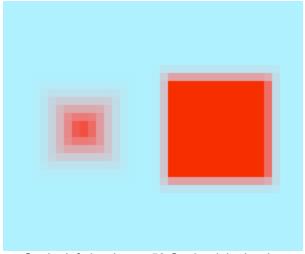


Different spacings

Hardness

Modifies the size of the brush hard center.

Figure 14.30. Hardness option

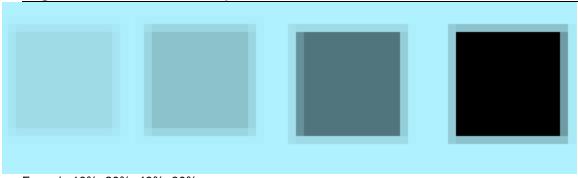


On the left: hardness=50 On the right: hardness=100.

Force

Modifies gain.

Figure 14.31. Force option



Force is 10%, 20%, 40%, 80%.

Enable dynamics

When you enable this option multiple dynamics related settings will appear below it. Brush dynamics let you map different brush parameters to several input dynamics. They are mostly used with graphic tablets, but some of them are also usable with a mouse.

You can read more about dynamics in **Dynamics**

When stroking paths and selections using a paint tool there is an option to select "Emulate brush dynamics". That means that when you stroke, brush pressure and velocity are varying along the length of the stroke. Pressure starts with zero, ramps up to full pressure and then ramps down again to no pressure. Velocity starts

from zero and ramps up to full speed by the end of the stroke.

Dynamics Options

These options are described in Dynamics Options

Apply Jitter

You know "spacing" in brush strokes: strokes are made of successive brush marks which, when they are very near, seem to draw a continuous line. Here, instead of being aligned brush marks are scattered over a distance you can set with the Amount slider.

Figure 14.32. "Jitter" example



From top to bottom: without jitter, jitter = 1, jitter = 4.

Jitter is also available in the Paint Dynamic Editor where you can connect jitter to the behavior of the brush.

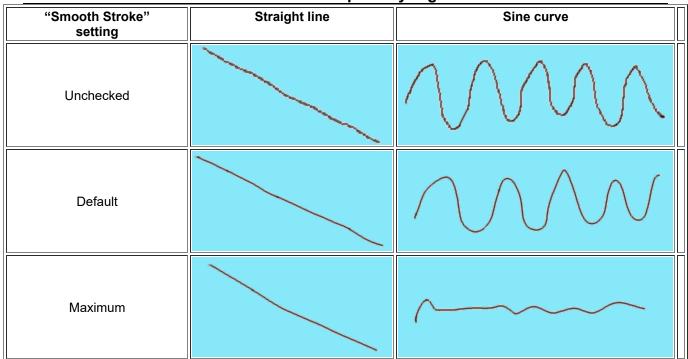
Smooth Stroke

This option doesn't affect the rendering of the brush stroke but its "shape". It takes away the wobbles of the line you are drawing. It makes drawing with a mouse easier.

When this option is checked, two setting areas appear, Quality and Weight. You can change the default values to adapt them to your skill.

High weight values rigidifies the brush stroke.

Table 14.2. "Smooth Stroke" example trying to draw with the mouse



Lock brush to view

When you are working on an image that is bigger (in pixels) than your screen, you have to zoom in and out a lot. This option allows a very natural "iterative refinement" process with no need to repeatedly ask the application to change brush size as you go between the broad strokes and the detailing.

If the brush size is relative to the canvas (option unchecked), zooming in makes the brush zoomed also and it appears larger (takes up more pixels on the screen). If you're working with a 300 pixels radius brush and you zoom in from 12% to 100%, the brush is now half the size of your screen! So you have to shrink the brush back down.

If the brush size is relative to the screen (option checked), then when you zoom in, the size of the displayed brush doesn't change, it looks smaller and so you can work on tiny details.

Figure 14.33. "Lock brush to view" example



An image displayed at 50% zoom so the whole image is visible. The "Lock brush to view" option is not checked and the brush size is set to 100 pixels high in the toolbox.



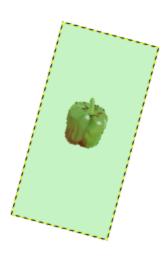
Part of the image at 200% zoom. The "Lock brush to view" option is not checked and the brush size is set to 100 pixels high in the toolbox. We paint with the pencil and the brush stroke of the selected pepper brush is displayed as 200 pixels high due to the zoom.



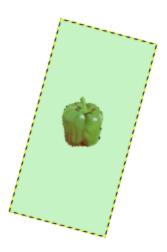
Part of the image at 200% zoom. The "Lock brush to view" option is checked and the brush size is set to 100 pixels high in the toolbox. We paint with the pencil and the brush stroke of the selected pepper brush is displayed as 100 pixels high due to the setting.

"Lock brush to view" can also be used to lock brush to view rotation:

Figure 14.34. "Lock brush to view" rotation example



The "Lock brush to view" option is checked and we <u>rotate the view 15° clockwise</u>. The brush stroke rotates with the view.



The "Lock brush to view" option is not checked and we <u>rotate the view 15° clockwise</u>. The brush stroke does not rotate with the view.

Incremental

Applies the effect incrementally as the mouse pointer moves.

The incremental checkbox does not seems to work as everyone expect. If it is deactivated (the default value) the maximum effect of a single stroke is determined by the opacity set in the opacity slider. If the opacity is set to less than 100, moving the brush over the same spot will increase the opacity if the brush is lifted in the meantime. Painting over with the same stroke has no such effect. If Incremental is active the brush will paint with full opacity independent of the slider's setting. This option is available for all paint tools except those which have a "rate" control, which automatically implies an incremental effect. See also Section 2, "Layer Modes".

Expand Layers

When enabled, this automatically enlarges the layer when painting outside the borders of the layer. If it is enabled, several additional settings appear below it.

Note that this doesn't allow you to extend a layer beyond the size of the image canvas. To change the size of the canvas see Canvas Size.

Amount

The amount of pixels to add in the direction you are painting.

Fill with

Here you can select how the new expanded area of the layer is filled. These are the same choices as in the <u>New Layer Dialog</u>.

Fill Layer Mask With

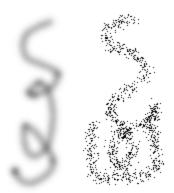
If the layer you are painting on has a layer mask, that mask will also be extended. This option gives you a choice how to fill the new area of the layer mask. You have a choice between White (full opacity) and Black (full transparency).

3.1.3. Paint Mode Examples

The following examples demonstrate some of GIMP's paint modes:

Dissolve

Figure 14.35. Dissolve mode example



Two brush-strokes made with the Airbrush, using the same fuzzy circular brush. Left: Normal mode. Right: Dissolve mode.

For any paint tool with opacity less than 100%, this very useful mode doesn't draw transparency but determines the probability of applying paint. This gives nice patterns of dots to paint-strokes or filling.

Figure 14.36. Painting in Dissolve mode



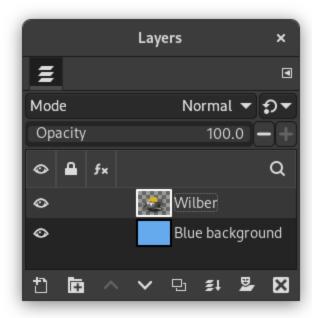
This image has only the background layer and no Alpha channel. The background color is sky blue. Three strokes with Pencil and various opacities: 100%, 50%, 25%. Foreground color pixels are scattered along brushstroke.

Behind

Figure 14.37. Example for layer mode "Behind"



Wilber over a blue background layer





Filled with pattern

This mode applies paint only to transparent areas of the layer: the lower the opacity, the more paint is applied. Thus, painting opaque areas has no effect; painting transparent areas has the same effect as normal mode. The result is always an increase in opacity. Of course none of this is meaningful for layers that lack an alpha channel.

In the above example image, Wilber is on the top layer, surrounded by transparency. The lower layer is solid light blue. The <u>Bucket Fill Tool</u> was used, with the Fill whole selection option checked and the entire layer was selected. A pattern was used to paint with the Bucket Fill tool.

Figure 14.38. Painting in "Behind" mode

This image has two layers. The upper layer with two blue stripes is active. We paint three vertical brush strokes in red color with the pencil tool at 100%, 50%, 25% transparency (from left to right): only transparent or semi-transparent pixels of the layer are painted.

Figure 14.39. Example for layer mode "Color erase"



Wilber over a blue background layer



White foreground color erased

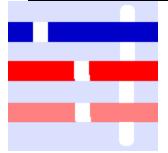
This mode erases the foreground color, replacing it with partial transparency. It acts like the <u>Color to Alpha</u> filter, applied to the area under the brushstroke. Note that this only works on layers that possess an alpha channel; otherwise, this mode is identical to Normal.

In the above example image, the color of the Bucket Fill tool was white, so white parts of Wilber were erased and the blue background shows through.

This image below has three horizontal stripes and has only one layer, the background layer. Background color is sky blue. We add three vertical brush strokes with the pencil tool:

- On the left, a vertical brush stroke with the exact color of the blue stripe: only this blue color is erased.
- 2. In the middle, a vertical brush stroke with the exact color of the red area: only this red color is erased, whatever its transparency. Erased areas are made transparent.
- 3. On the right, a vertical brush stroke with the sky blue color of the layer background: only this color is erased.

Figure 14.40. Painting in "Color Erase" mode



Vertical brush strokes painted in blue (on the left), in red (in the middle), in the background color (on the right).

3.1.4. Further Information

Advanced users may be interested to know that paint tools actually operate at a sub-pixel level, in order to avoid producing jagged-looking results. One consequence of this is that even if you work with a hard-edged brush, such as one of the Circle brushes, pixels on the edge of the brushstroke will only be partially affected. If you need to have all-or-nothing effects (which may be necessary for getting a good selection, or for cutting and pasting, or for operating pixel-by-pixel at a high zoom level), use the Pencil tool, which makes all brushes perfectly hard and disables sub-pixel anti-aliasing.











3.2. Dynamics

Report a bug in GIMP Report a documentation error

3.2. Dynamics







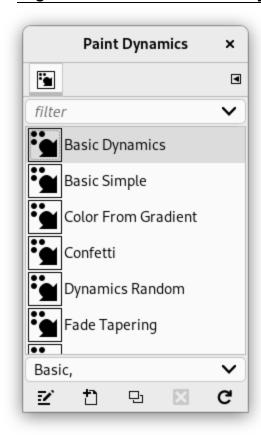
3.2. Dynamics

The dynamics apply a more "real feeling" to the brush by connecting one or more of the brush parameters to the way of using the brush. You may for instance let the width of the pencil vary according to the speed of the stylus or the mouse, make the color saturation depending on the stylus pressure, make the color changing as the direction of the brush changes on the canvas, and so on. You may choose among several presets or define your own. The dynamics are created to be used together with drawing tablets, but some are available using the mouse.

The dynamics will make some of the behaviors of the drawing tools act more like the physical ("real") tools. The Dynamics area in the Tool Option dialog shows from left to right, the button to open the list containing the available dynamic presets, a field displaying the name of the current preset, and rightmost the edit button. Click on the button to open the dialog window displaying the available dynamics presets and select another preset.

3.2.1. The Paint Dynamics Dialog

Figure 14.41. The Paint Dynamics Dialog



The Paint Dynamics dialog window can be opened

- from the main menu: Windows → Dockable Dialogs → Paint Dynamics,
- or by clicking on the Open the dynamics selection button in the list of dynamics presets.

This dialog is a dockable dialog; see the section <u>Section 2.3, "Dialogs and Docking"</u> for help on manipulating it. From this dialog you can select from all the available presets, just as from the list of dynamics presets. The button bar at the bottom offers the following functionality:

• Edit this dynamics: Clicking this will open the <u>Paint Dynamics Editor</u> dialog where you will be able to edit the selected dynamics.

- Create a new dynamics: Do just that.
- Duplicate this dynamics: Make a copy of the selected dynamics.
- Delete this dynamics : Delete the selected dynamics. Note: this button is disabled for the default dynamics that come with GIMP.
- C Refresh dynamics: Update the dynamics list.

3.2.1.1. Dynamics Context Menu

Overview

You can get the dynamics context menu by right clicking on a dynamics preset. Most of the operations on dynamics are also available through buttons at the bottom of the dynamics dialog. Those operations are documented there.

Edit Dynamics..., New Dynamics, Duplicate Dynamics, Delete Dynamics, Refresh Dynamics See Dynamics Dialog.

Copy Dynamics Location

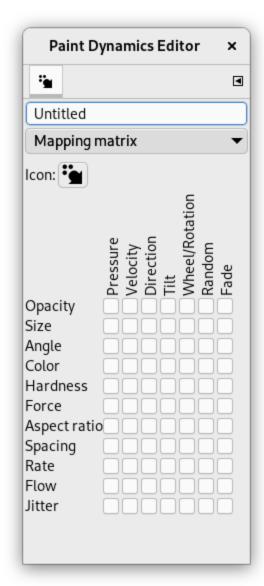
Copy Dynamics Location allows you to copy the path of the selected Dynamics preset to the clipboard.

Show in File Manager

Show in File Manager opens the location of the Dynamics preset in the default File Manager on your system.

3.2.2. Editing Paint Dynamics

Figure 14.42. Paint Dynamics Editor dialog



The Paint Dynamics Editor can be called from:

- the edit button in the Tool Options dialog,
- the Paint Dynamics selection dialog by clicking either the Edit Dynamics button or the Create a New Dynamics button.

You select the desired behaviors by clicking in the small squares. Clicking a second time will unselect the marking.



Note

Pre-installed dynamics are disabled as you cannot change their settings. To edit the options you have to work on a copy made from one of the pre-installed dynamics or create a new dynamics.

3.2.3. The Paint Dynamics Matrix

The main part of the edit dialog is a table where you can decide which brush parameters should be affected by the way you use the stylus or the mouse. You can enable as many parameters and parameter combinations you want, but usually the fewer the better.

Each column in the table represents a stylus or mouse action except the random and the fade functions. All functions works with graphic tablet. Some of the functions are also available using the mouse. These functions are marked in the tables. The descriptions are using the default settings of all functions

• Pressure: It allows you to decide which aspects of the tool's action will be affected by pressing the stylus against the tablet.

- Velocity: (mouse) This is the speed of the brush.
- Direction: (mouse) This is the moving direction of the brush.
- Tilt: The behavior of the function depends on the tilting of the stylus.
- Wheel: The output depends on the rotation of the stylus or the setting of the wheel on the airbrush pen.
- Random: (mouse) The selected option will change at random.
- Fade: (mouse) The selected option will be faded in or out depending on the settings of the fade options in the Dynamic Options menu of the Tools Option dialog.

Each row shows a brush parameter and seven checkboxes, one for each action. You connect the parameters to the actions by clicking the appropriate boxes. Clicking on a selected box will unselect the connection.

Opacity

Pressure: Press harder to make the drawing less transparent.

Velocity: (mouse) The opacity decreases as the speed of the stylus increases.

Direction: (mouse) The opacity depends on the direction of the stylus or the mouse. The effect seems to have a touch of randomness built in.

Tilt: The opacity depends on the tilt of the stylus.

Wheel

Random: (mouse) The opacity changes at random in the interval set by the opacity slider in the Tool Options dialog.

Fade: (mouse) Starting with full transparency and ending with the opacity set by the opacity slider in the Tool Options dialog.

Size

Pressure: Press harder to make the brush wider.

Velocity: (mouse) Increasing speed decreases the width of the brush.

Direction: (mouse) The size of the brush depends on the moving direction of the stylus or the mouse. The effect seems to have a touch of randomness built in.

Tilt: The size of the brush depends on the tilt of the stylus.

Wheel

Random: (mouse) The size of the brush changes at random up to the size set in the brush size slider in the Tool Options dialog.

Fade: (mouse) Fades from a narrow brush to the size set by the brush size slider in the Tools Options dialog.

Angle

Color

By default the color is picked from the foreground color in the toolbox. However, if the color is activated in the dynamics editor, the color is instead collected from the active gradient.

Velocity: (mouse) At slow speeds the color is collected from the right side of the gradient. As the speed increase the color is picked more and more from the left side of the gradient.

Direction: (mouse) The direction determine where on the gradient the color is picked from. The effect seems to work a bit on random.

Random: (mouse) The color is picked at random from the gradient.

Fade: (mouse) The start color is collected from the left side of the gradient and then more and more from the right side during the stroke. The behavior of the fading is set in the Fade Options in the Tool Options Dialog.

Hardness

The hardness option is useful only for fuzzy brushes.

Velocity: (mouse) At slow speed the brush is hard and become more fuzzy as the speed increase.

Random: (mouse) The fussiness of the brush varies at random.

Fade: (mouse) The brush become less fuzzy during the stroke. The behavior of the fading is set in the Fade Options in the Tool Options Dialog.

Force

Aspect Ratio

The Aspect Ratio Slider in the Tool Options Dialog must be set to other values than the default value of 0.00 to activate the dynamics. If the aspect ratio slider is set to a negative value the width of the brush will vary while the height of the brush is constant. If the slider is set to a positive value only the height of the brush will vary.

Velocity: (mouse) The aspect ratio of the brush (width / height) varies with the speed of the brush.

Direction: (mouse) The aspect ratio of the brush varies with the moving direction of the brush. The effect seems to have a touch of randomness built in.

Random: (mouse) The aspect ratio of the brush varies at random.

Fade: (mouse) If the Aspect Ratio Slider is set to a positive value the brush will fade from full height at the start of the stroke to the height set by the aspect ratio slider. If the slider is set to a negative value the brush fades from full width to the width set by the aspect ratio slider. The behavior of the fading is set in the Fade Options in the Tool Options Dialog.

Spacing

Spacing is the distance between the marks set by the brush when drawing lines. With this option set the spacing is affected by how the stylus or mouse is used.

Velocity: (mouse) The spacing between the footprints of the brush increases with increasing speed.

Direction: (mouse) The spacing varies with the moving direction of the brush. The effect seems to have a touch of randomness built in.

Random: (mouse) The spacing varies at random.

Fade: (mouse) Starting with a wide spacing and gradually make the spacing narrower. The behavior of the fading is set in the Fade Options in the Tool Options Dialog.

Rate

This option applies to the Airbrush, Blur/Sharpen tool, and Smudge tool, all of which have time-based effects. The actions of these tools are more or less quick. The amount of Rate depends on the setting of the Rate slider in the Tool Options dialog.

Flow

Significant only for the Airbrush: more or less paint is delivered. The amount of flow depends on the setting of the Flow slider in the Tool Options dialog.

Jitter

Normally the brush draws a line by printing the brush marks close together. Adding jitter means that the brush prints are scattered along the line. The amount of scattering depends on the setting of the jitter slider in the Tool Options dialog window.

Pressure: At low pressure the brush prints are spread according to the value set in the jitter amount slider. As the pressure increases the scattering amount decreases.

Velocity: (mouse) At slow speed the brush prints are spread according to the value set in the jitter amount slider. As the speed increase the scattering amount decrease.

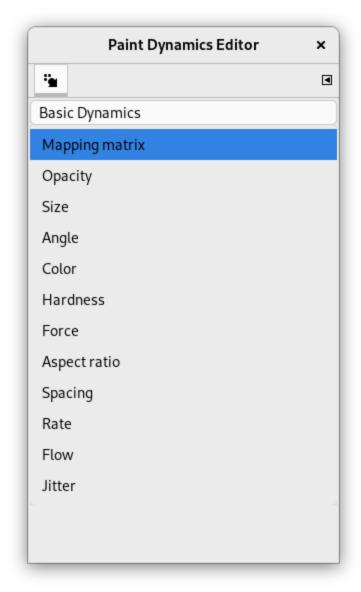
Direction: (mouse) The jitter effect depends on the direction of the brush. The effect seems to have a touch of randomness built in.

Random: (mouse)The jitter varies at random.

Fade: (mouse) Starting with no jitter and ending with the amount of jitter set in the jitter amount slider. The behavior of the fading is set in the fade options in the Tool Options dialog.

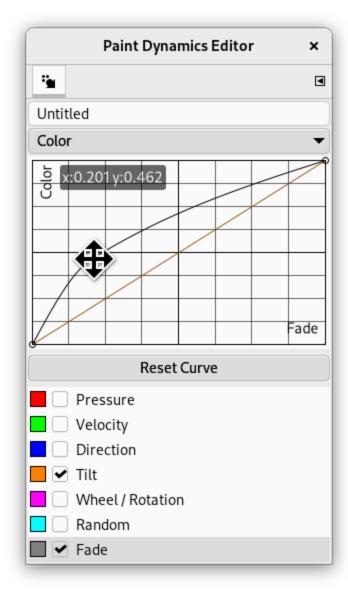
3.2.4. Customizing the Dynamics

Figure 14.43. Customizing the Dynamics



If the current options do not suits you, you may fine-tune the settings from the Paint Dynamics Editor. Click on the down arrow to open the drop-down menu and then select what option to change.

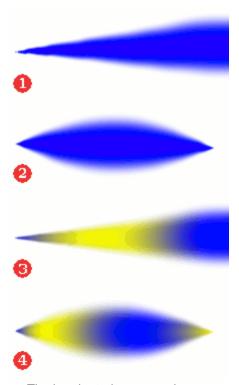
Figure 14.44. The Fine Tuning Curve



Click on one of the options to open the customizing dialog. The upper part of the dialog contains a curve where you can adjust the behaviour of the chosen parameters selected in the lower part of the dialog. You can drag the curve by pointing on it with the mouse pointer, holding down the left mouse button and the move the curve wherever you want inside the diagram.

3.2.5. Dynamics Examples

Figure 14.45. Dynamics Options



The brush strokes examples

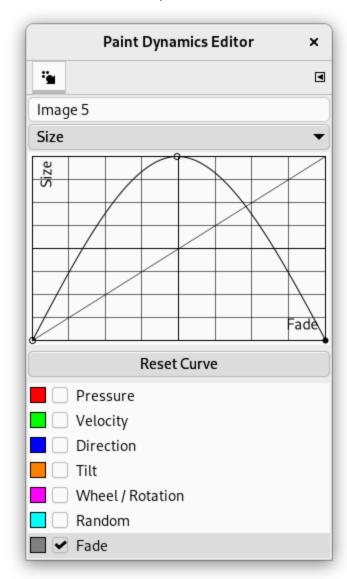


Image 5: Brush size: Fade curve

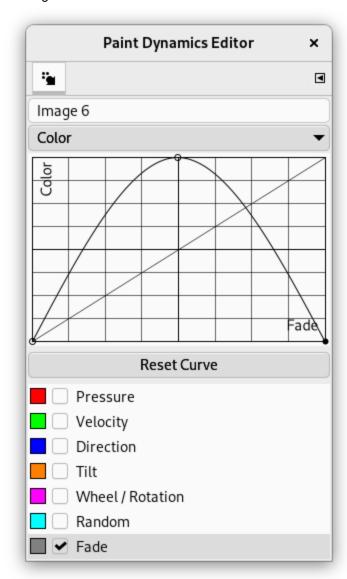


Image 6: Color: Fade curve

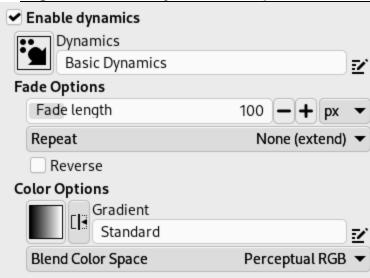
The examples shown are very brief, but will perhaps give you an idea of how to use this functions. Feel free to try other combinations. In these examples the foreground color is set to blue (#0000ff) and the background color to yellow (#ffff00). Fading: 200 pixels. Paintbrush size: 72. All other settings are the default values except for those values changed

- Example 1 shows the result when the brush size is connected to the fading. Default options. The brush size starts as zero and increase to the size set in the brush size slider in the Tools Options Dialog.
- In example 2 the brush size is still connected to the fade tool, but the fade curve is set as in image 5. The brush size starts at zero, fades up to full size and then fades down to zero again.

 The full fade length is set along the x-axis from left to right. The y-axis determines the size of the brush. At the bottom the brush size is zero, and at the top of the diagram the brush is set to the full size according to the size set in the slider in the Brush Options Dialog. Study the example and the curve to see the relationship.
- In example 3 the brush size is disconnected from the fade tool. The color is connected with the fade option with the curve set as in image 6. At the start of the drawing the color is picked from the left side of the gradient, then gradually more from the right side of the gradient and then finally fading back to the left side again. As usual the x-axis is the total fade length. When the curve is near the bottom of the diagram the color is picked from the left side of the gradient. With the curve at the top of the diagram the color is picked from the right side of the gradient.
- The last example shows a combination of these two settings. Both the size of the brush and the color are connected to the fading function with the curves set as in image 5 and 6.

3.2.6. Dynamics Options

Figure 14.46. Dynamics Options



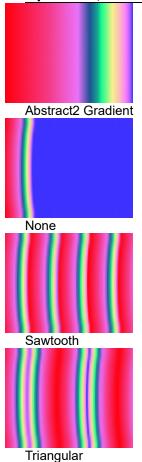
Many of the dynamics behaviors also depends on the settings of the Dynamics Options in the Tool Options dialog and vice versa. For example the fading will not work if it is not applied in the Dynamics section.

Fade Options

This slider determines the length of the fading. What will actually happen depends on the setting of the Dynamic. If set to act on the color for example, the color will be taken from the current gradient starting from the left side of the gradient and moving toward the right side of the gradient.

The Fade Options has a drop-down list determining how the fading is repeated.

Figure 14.47. Illustration of the effects of the three gradient-repeat options, for the Abstract 2 gradient.



This option determines what happens if a brush stroke extends farther than the Length specified by the slider. There are three possibilities:

- None means that the color from the end of the gradient will be used throughout the remainder of the stroke;
- Sawtooth wave means that the gradient will be restarted from the beginning, which will often produce a color discontinuity;
- Triangular wave means that the gradient will be traversed in reverse, afterwards bouncing back and forth until the end of the brush stroke.

Color Options

Here you can choose the gradient to use as color source when using the brush with the color option set. Click on the box showing the gradient to change to another one from the gradient list.

If no color option is selected in the currently used dynamics, the brush will use the foreground color set in the toolbox.







3. Paint Tools



3.3. Brush Tools (Pencil, Paintbrush, Airbrush)

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3.3. Brush Tools (Pencil, Paintbrush, Airbrush)

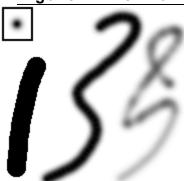


3. Paint Tools



3.3. Brush Tools (Pencil, Paintbrush, Airbrush)

Figure 14.48. Painting example



Three strokes painted with the same round fuzzy brush (outline shown in upper left), using the Pencil (left), Paintbrush (middle), and Airbrush (right).

The tools in this group are GIMP's basic painting tools, and they have enough features in common to be worth discussing together in this section. Features common to all paint tools are described in the Common Features section. Features specific to an individual tool are described in the section devoted to that tool.

The Pencil is the crudest of the tools in this group: it makes hard, non-anti-aliased brushstrokes. The Paintbrush is intermediate: it is probably the most commonly used of the group. The Airbrush is the most flexible and controllable. This flexibility also makes it a bit more difficult to use than the Paintbrush, however.

All of these tools share the same brushes, and the same options for choosing colors, either from the basic palette or from a gradient. All are capable of painting in a wide variety of modes.

3.3.1. Key modifiers

Ctrl

Holding down the Ctrl key changes each of these tools to a Color Picker: clicking on any pixel of any layer sets the foreground color (as displayed in the Toolbox Color Area) to the color of the pixel.

Shift

This key places these tools into straight line mode. Holding Shift while clicking the mouse left Button will generate a straight line. Consecutive clicks will continue drawing straight lines that originate from the end of the last line.



3.2. Dynamics







3.4. Bucket Fill

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3.4. Bucket Fill



3. Paint Tools



3.4. Bucket Fill

This tool fills a selection with the current foreground color. If you Ctrl +click and use the Bucket tool, it will use the background color instead. Depending on how the tool options are set, the Bucket Fill tool will either fill the entire selection, or only parts whose colors are similar to the point you click on. The tool options also affect the way transparency is handled.

The amount of fill depends on what Fill Threshold you have specified. The fill threshold determines how far the fill will spread (similar to the way in which the <u>Fuzzy Select</u> tool works). The fill starts at the point where you click and spreads outward until the color or alpha value becomes "too different".

When you fill objects in a transparent layer (such as letters in a text layer) with a different color than before, you may find that a border of the old color still surrounds the objects. This is due to a low fill-threshold in the Bucket Fill options dialog. With a low threshold, the bucket tool won't fill semi-transparent pixels, and they will stand out against the fill because they have kept their original color.

If you want to fill areas that are totally transparent, you have to make sure that the "Lock" option (in the Layers dialog) is unchecked. If this option is checked, only the non-transparent parts of the layer will be filled.

3.4.1. Activating the Tool

There are different possibilities to activate the tool:

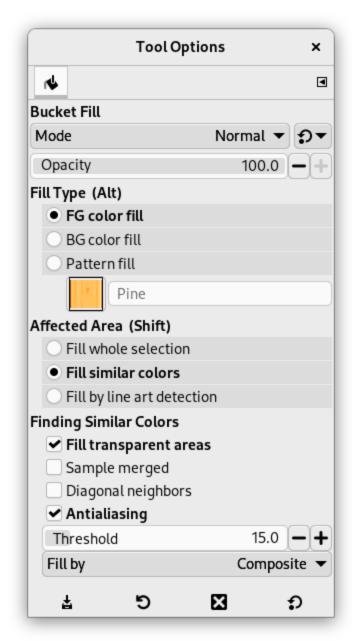
- From the main menu: Tools \rightarrow Paint Tools \rightarrow Bucket Fill.
- By clicking the tool icon [♣] in the Toolbox.
- By pressing the | Shift |+ B | keyboard shortcut.

3.4.2. Key modifiers

- **Ctrl**, similarly to paint tools, allows you to pick surrounding colors on canvas without having to switch to *Color Picker tool*.
- Shift toggles the use of Fill Similar Color or Fill Whole Selection on the fly.
- Alt toggles Fill type between FG and BG colors.

3.4.3. Options

Figure 14.49. Tool Options Dialog



Normally, tool options are displayed in a window attached under the Toolbox as soon as you activate a tool. If they are not, you can access them from the main menu through Windows \rightarrow Dockable Windows \rightarrow Tool Options which opens the option window of the selected tool. The available tool options can also be accessed by double clicking the corresponding tool icon in the Toolbox.

Mode, Opacity

See <u>Paint Tools</u> for help with options that are common to all these tools. Only options that are specific to the Bucket Fill tool are explained here.

Fill Type

GIMP provides three fill types:

FG Color Fill

sets the fill color to the currently selected foreground color.

BG Color Fill

sets the fill color to the currently selected background color.

Pattern Fill

sets the fill color to the currently selected pattern. You can select the pattern to use in a drop-down list. This drop-down list allows the user to select one of many fill patterns to use on the next fill operation. The manner in which the list is presented is controlled by the four buttons at the bottom of the selector.

Affected Area

• Fill whole selection makes GIMP fill a pre-existent selection or the whole layer. A quicker approach to do the same thing could be to click and drag the foreground, background or pattern color, leaving it onto the selection. Also, pressing Ctrl key allows you to pick a color on the image as foreground color.

- Fill similar colors: this is the default setting: the tool fills the area with a color near the pixel onto you have clicked. The color similarity is defined by options in Finding Similar Colors. Click and drag to fill.
- Fill by line art detection: This allows you to fill areas surrounded by "line arts", trying to leave no unfilled pixels near the lines, and closing potential zones.

 Line art detection is also known as Smart Colorization. The author describes clearly problems he met in

https://girinstud.io/news/2019/02/smart-colorization-in-gimp/. Options are described below.

Finding Similar Colors

These options appear when the Fill similar colors option is checked:

- The option Fill Transparent Areas offers the possibility of filling areas with low opacity.
- Sample merged: If you enable this option, sampling is not calculated only from the values of the active layer, but from all visible layers.
 For more information, see the Glossary entry.
- To understand what diagonal neighbors are, please refer to Diagonal-neighbors in Fuzzy Select tool.
- Please refer to <u>Antialiasing</u> in Glossary.
- The Threshold slider sets the level at which color weights are measured for fill boundaries. A higher setting will fill more of a multi colored image and conversely, a lower setting will fill less area.
- With the Fill by option you can choose which component of the image GIMP shall use to calculate the similarity and to determine the borders of filling.

The components you can choose from are Composite, Red, Green, Blue, HSV Hue, HSV Saturation, HSV Value, LCh Lightness, LCh Chroma, LCh Hue, Alpha.

This option is not easy to understand. You have chosen, for example, the Red channel. When you click on any pixel, the tool searches for contiguous pixels similar for *the red channel* to the clicked pixel, according to the set threshold. Here is an example:

Original image: three strips with gradients of pure colors. Red (255;0;0), Green (0;255;0), Blue (0;0;255). We are going to use the Bucket-fill tool with the magenta color and a Threshold set to 15.

Image 1: Fill By = Composite. We successively clicked in the three color strips. Every strip is filled according to the threshold.

Image 2: Fill By = Red. We clicked in the red strip. The tool searches for contiguous pixels which have a similar value in the red channel, according to the set threshold. Only a narrow area corresponds to these standards. In the green and the blue strip, the value of pixels in the red channel is 0, very much different from the red channel value of the clicked pixel: the color doesn't spread to them.

Image 3: Fill By = Red. We clicked in the green strip. There, the value of the clicked pixel in the red channel is 0. All pixels in the green and the blue strips have the same red channel value (0): they are all painted.

Figure 14.50. Example for "Fill By"

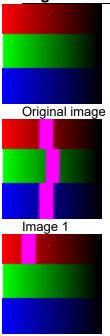
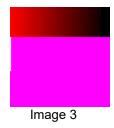


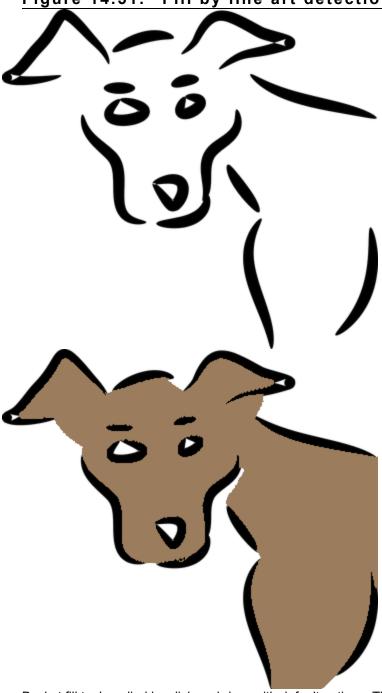
Image 2



Line Art Detection

These options appear when the Fill by line art detection option is checked:

Figure 14.51. "Fill by line art detection" example



Bucket fill tool applied by click-and-drag with default options. They don't well fit this image, especially on eyebrows that are almost wiped off.

• Source: by default, information for line art computation is taken from All visible layers. You can also select the Selected layer, the Layer below the selected one, or the Layer above the selected one as the source.

- Detect opacity rather than grayscale: fills completely transparent regions.
- Line art detection threshold: threshold to detect contour (higher values will detect more pixels).

Line Art Closure

These options appear when the Fill by line art detection option is checked:

- Automatic closure: When this option is enabled, Maximum gap length defines the maximum gap (in pixels) in line art which can be closed.
- Manual closure in fill layer: when enabled, consider pixels of the selected line art source layer that are using the selected fill color as line art closure.

This setting is only enabled when the line art source is Layer below the selected one, or Layer above the selected one.

When your line art sketch has holes, you can fill these holes with a brush in the fill color on a layer above or below it, before using bucket fill on your color layer. Especially on larger images this can be faster than selecting All visible layers as source.

Layer below the selected one would be most useful when you are coloring a scanned sketch, while Layer above the selected one can be used when you are sketching yourself and filling the colors below the sketch.

Fill borders

These options appear when the Fill by line art detection option is checked:

• Maximum growing size: maximum number of pixels grown under the line art. Increasing this value makes lines thinner.



To improve eyebrows in the example, Maximum growing size is reduced to 1.

Feather edges: feathers fill edges.

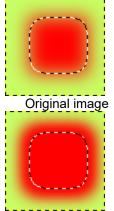


• Stroke borders: stroke fill borders with the stroke options of the paint tool selected in the dropdown below.

3.4.4. Fill a feathered selection

By clicking repeatedly in a selection with feathered edges, you progressively fill the feathered border:

Figure 14.52. Example for "Fill a feathered Selection"



After clicking 3 times more with the Bucket-Fill tool



3.3. Brush Tools (Pencil, Paintbrush, Airbrush)

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3.5. Gradient

https://docs.gimp.org/3.0/en/gimp-tool-bucket-fill.html

3.5. Gradient



3. Paint Tools



3.5. Gradient

This tool fills the selected area with a gradient from the foreground and background colors by default, but there are many options. To make a gradient, drag the cursor in the direction you want the gradient to go and you release the mouse button when you feel you have the right position and size of your gradient. The softness of the gradient depends on how far you drag the cursor. The shorter the drag distance, the sharper it will be. If you click and drag outside the selection, only a part of the gradient will appear in the selection.

There are an astonishing number of things you can do with this tool, and the possibilities may seem a bit overwhelming at first. The two most important options you have are the Gradient and the Shape. Clicking the Gradient button in the tool options brings up a Gradient Select window, allowing you to choose from among a variety of gradients supplied with GIMP; you can also construct and save custom gradients. Further information about gradients can be found in Section 6, "Gradients" and Section 3.5, "Gradients Dialog".

For Shape, there are 11 options: Linear, Bilinear, Radial, Square, Conical (symmetric), Conical (asymmetric), Shaped (angular), Shaped (spherical), Shaped (dimpled), Spiral (clockwise), and Spiral (counterclockwise); these are described in detail below. The Shaped options are the most interesting: they cause the gradient to follow the shape of the selection boundary, no matter how twisty it is. Unlike the other shapes, Shaped gradients are not affected by the length or direction of the line you draw: for them as well as every other type of gradient you are required to click inside the selection and move the mouse, but a Shaped appears the same no matter where you click or how you move.



Tip

Check out the Difference option in the Mode menu, where doing the same thing (even with full opacity) will result in fantastic swirling patterns, changing and adding every time you drag the cursor.

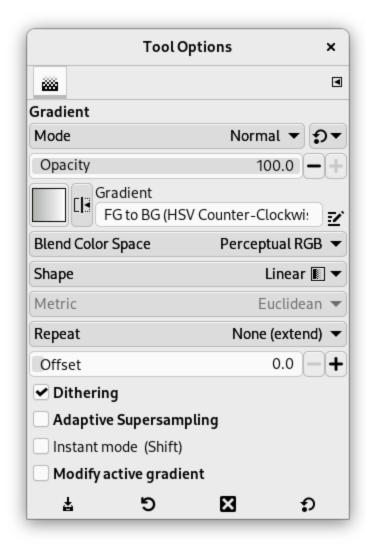
3.5.1. Activating the Tool

There are different possibilities to activate the tool:

- From the main menu: Tools \rightarrow Paint Tools \rightarrow Gradient.
- By clicking the tool icon in the Toolbox.
- By pressing the | G | keyboard shortcut.

3.5.2. Options

Figure 14.53. Tool Options Dialog



Normally, tool options are displayed in a window attached under the Toolbox as soon as you activate a tool. If they are not, you can access them from the main menu through Windows \rightarrow Dockable Windows \rightarrow Tool Options which opens the option window of the selected tool. The available tool options can also be accessed by double clicking the corresponding tool icon in the Toolbox.

Mode, Opacity

See the Common Paint Tool Options for a description of tool options that apply to many or all paint tools.

Gradient

A variety of gradient patterns can be selected from the drop-down list. The tool causes a shading pattern that transitions from foreground to background color or introduces others colors, in the direction the user determines by drawing a line in the image. For the purposes of drawing the gradient, clicking on the Reverse reverses the gradient direction with the effect, for instance, of swapping the foreground and background colors.

On the right hand, a button to open the Gradient Editor dialog.

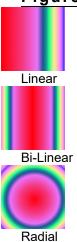
Blend Color Space

- Perceptual RGB: When this option is chosen, the Blend Color Space is sRGB. This is the default.
- Linear RGB: When this option is chosen, the Blend Color Space is linearized sRGB (defined by the sRGB primaries and a linear tone reproduction curve). This results in gradients that resemble the physical behavior of light. This option should be used if the color, as measured with a colorimeter, should change linearly with the distance from the color stops within the gradient.
- CIE Lab: When this option is chosen, the Blend Color Space is CIE L*a*b*. This perceptionally uniform color space is used to model human perception of color blending.

Shape

GIMP provides 11 shapes, which can be selected from the drop-down list. Details on each of the shapes are given below.

Figure 14.54. Examples of gradient shapes



Linear

This gradient begins with the foreground color at the starting point of the drawn line and transitions linearly to the background color at the ending point.

Bi-Linear

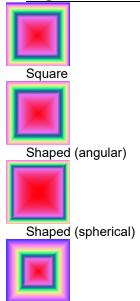
This shape proceeds in both directions from the starting point, for a distance determined by the length of the drawn line. It is useful, for example, for giving the appearance of a cylinder.

Radial

This gradient gives a circle, with foreground color at the center and background color outside the circle. It gives the appearance of a sphere without directional lighting.

Square, Shaped

Figure 14.55. Square-shaped gradient examples

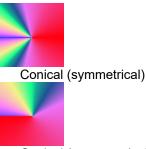


Shaped (dimpled)

There are four shapes that are some variant on a square: Square, Shaped (angular), Shaped (spherical), and Shaped (dimpled). They all put the foreground color at the center of a square, whose center is at the start of the drawn line, and whose half-diagonal is the length of the drawn line. The four options provide a variety in the manner in which the gradient is calculated; experimentation is the best means of seeing the differences.

Conical (symmetric), Conical (asymmetric)

Figure 14.56. Conical gradient examples



Conical (asymmetrical)

The Conical (symmetrical) shape gives the sensation of looking down at the tip of a cone, which appears to be illuminated with the background color from a direction determined by the direction of the drawn line. Conical (asymmetric) is similar to Conical (symmetric) except that the "cone" appears to have a ridge where the line is drawn.

Spiral (clockwise), Spiral (counter-clockwise)

Figure 14.57. Spiral gradient examples



Spiral (clockwise)



Spiral (counterclockwise)

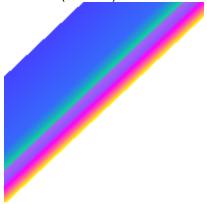
The Spiral shape provide spirals whose repeat width is determined by the length of the drawn line.

Repeat

None (extend) as default.



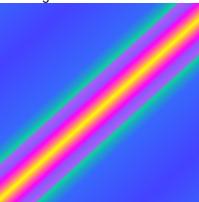
• None (truncate): areas before and after endpoints are truncated.



• Sawtooth wave: the Sawtooth pattern is achieved by beginning with the foreground, transitioning to the background, then starting over with the foreground.



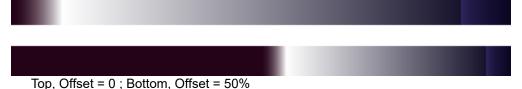
 Triangular wave: starts with the foreground, transitions to the background, then transitions back to the foreground.



Offset

The Offset value permits to increase the "slope" of the gradient. It determines how far from the clicked starting point the gradient will begin. Shaped forms are not affected by this option.

Figure 14.58. "Blend" tool: Offset example



Dithering

Dithering is explained in the Glossary

Adaptive Supersampling

This is a more sophisticated means of smoothing the "jagged" effect of a sharp transition of color along a slanted or curved line. To find out what works best in your case, you will have to test this yourself.

Instant mode



Warning

The option must be activated (with **Shift** also) before starting drawing gradient.

When this option is checked, the gradient line disappears as soon as you release the mouse button. You can't edit color stops before applying the gradient fill.

Modify active gradient

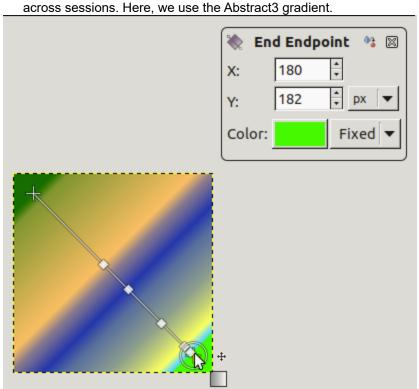
When this option is checked, the custom gradient is not created automatically and must be created manually. The option can be activated before starting drawing gradient or if the active gradient is not the custom gradient. Allows changing user-writable gradients directly rather than creating copies of them.

3.5.3. Editing Gradient

On-canvas editing

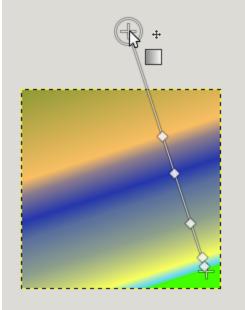
All the Gradient Editor dialog features are available directly on canvas. You can create and delete color stops, select and shift them, assign colors to color stops, change blending and coloring for segments between color stops, create color stops from midpoints.

Select a gradient in the gradient dialog. Click and drag on canvas. A line is drawn and the gradient is displayed. You can edit this gradient by moving the mouse pointer on this line. As soon as you try to edit gradient, GIMP creates a custom gradient, which is a copy of the selected gradient. It becomes the active gradient and will be preserved



The Abstract3 gradient, with endpoints

At both ends of the line, you can see a Start endpoint and an End endpoint. Click and drag an endpoint (the mouse pointer is accompanied with a moving cross) to move it where you want on your screen. A small window appears showing data about the selected endpoint: the position of the mouse (coordinate origin is the upper left corner of image or selection), the starting (left) and the ending (right) color of the gradient.



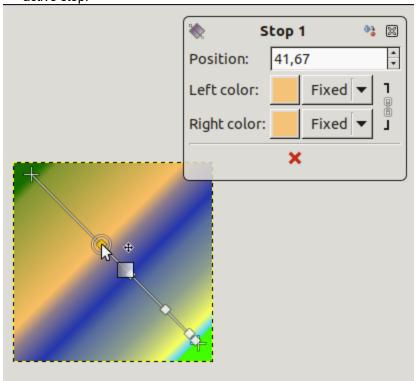
End point moved



Note

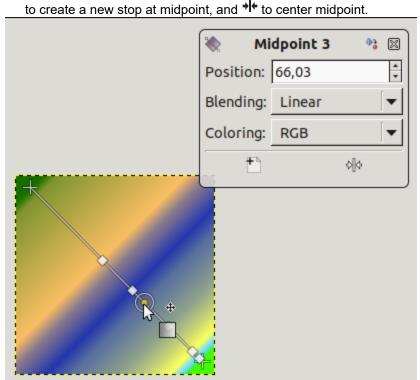
In you only move endpoints, the custom gradient is not created yet.

On the line, you can see several small squares. These are Stops that divide gradient into segments. You can edit segments separately. Click and drag stops to move them (the active endpoint takes a yellow color). As soon as you move a stop, the custom gradient is created. The small data window shows a button that allow you to remove the active stop.



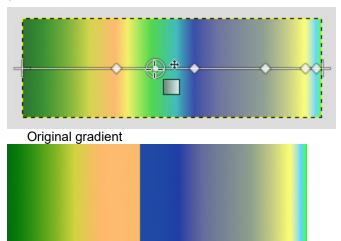
Stop point moved and data window

If you move the mouse pointer on the line, a Midpoint shows up. Then, the small data window has two buttons:



For Stops and Midpoints, Position refers to the gradient line: 0 is start endpoint, 100 is end endpoint. Blending: you can change the blending mode between two stops, using the drop-down list. The Step option creates a hard-edge transition between the two adjacent color stops at the midpoint.

Figure 14.59. "Step" option example



Step applied at Midpoint2

Changing color: in stop and end data windows, you have color buttons with a drop-down list. The default option is Fixed; this means that color choice will be independent from foreground and background colors. Click on a color button to open a color selector.

Kev modifiers

Ctrl is used to create straight lines that are constrained to 15 degree absolute angles.

Alt or Ctrl + Alt to move the whole line.

The Gradient Editor

See Section 3.5.3, "The Gradient Editor".











3.6. Pencil

Report a bug in GIMP Report a documentation error

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3.6. Pencil



3. Paint Tools



3.6. Pencil

The Pencil tool is used to draw free hand lines with a hard edge. The pencil and paintbrush are similar tools. The main difference between the two tools is that although both use the same type of brush, the pencil tool will not produce fuzzy edges, even with a very fuzzy brush. It does not even do anti-aliasing.

Why would you want to work with such a crude tool? Perhaps the most important usage is when working with very small images, such as icons, where you operate at a high zoom level and need to get every pixel exactly right. With the pencil tool, you can be confident that every pixel within the brush outline will be changed in exactly the way you expect.



Tip

If you want to draw straight lines with the Pencil (or any of several other paint tools), click at the starting point, then hold down **Shift** and click at the ending point.

3.6.1. Activating the Tool

There are different possibilities to activate the tool:

- From the main menu: Tools \rightarrow Paint Tools \rightarrow Pencil.
- By clicking the tool icon in the Toolbox.
- By pressing the **N** keyboard shortcut.

3.6.2. Key modifiers

Ctrl

This key changes the pencil to a Color Picker.

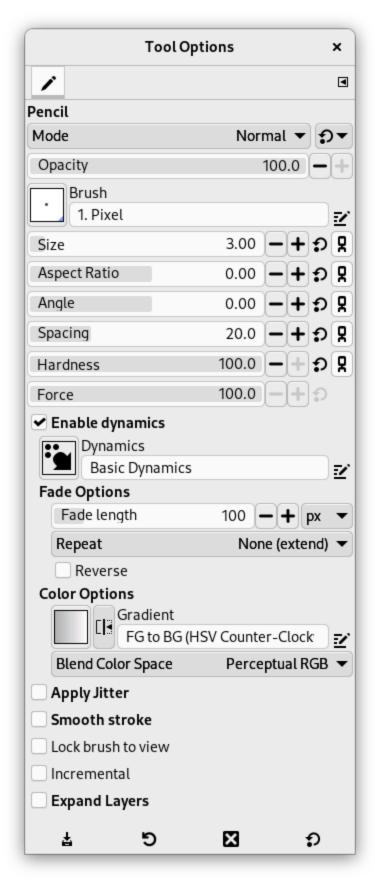
Shift

This key places the pencil tool into straight line mode. Holding **Shift** while clicking the mouse Left Button will generate a straight line. Consecutive clicks will continue drawing straight lines that originate from the end of the last line.

3.6.3. Options

Figure 14.60. Tool Options Dialog

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Normally, tool options are displayed in a window attached under the Toolbox as soon as you activate a tool. If they are not, you can access them from the main menu through Windows \rightarrow Dockable Windows \rightarrow Tool Options which opens the option window of the selected tool. The available tool options can also be accessed by double clicking the corresponding tool icon in the Toolbox.

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Mode, Opacity, Brush, Size, Aspect Ratio, Angle, Spacing, Hardness, Force, Dynamics, Dynamics Options, Apply Jitter, Smooth Stroke, Lock brush to view, Incremental, Expand Layers

See the Common Paint Tool Options for a description of tool options that apply to many or all paint tools.



3.5. Gradient





3.7. Paintbrush

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3.7. Paintbrush



3. Paint Tools



3.7. Paintbrush

The paintbrush tool paints fuzzy brush strokes. All strokes are rendered using the current brush.

3.7.1. Activating the Tool

There are different possibilities to activate the tool:

- From the main menu: Tools → Paint Tools → Paintbrush.
- By clicking the tool icon in the Toolbox.
- By pressing the | P | keyboard shortcut.

3.7.2. Key modifiers

Ctrl

This key changes the paintbrush to a Color Picker.

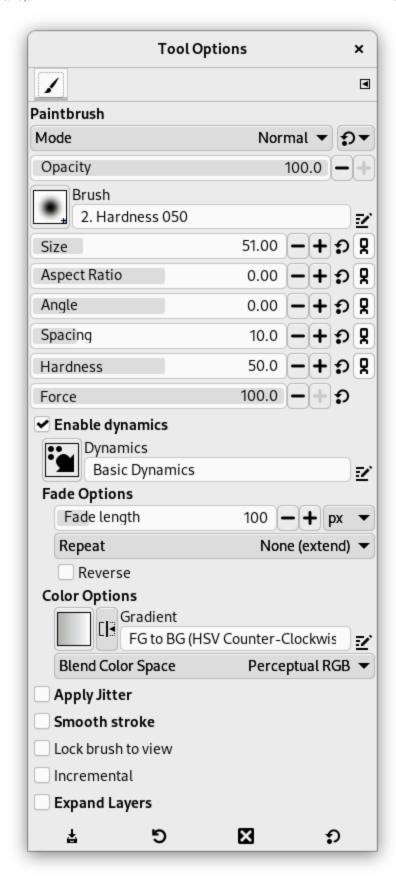
Shift

This key places the paintbrush into straight line mode. Holding **Shift** while clicking Button 1 will generate a straight line. Consecutive clicks will continue drawing straight lines that originate from the end of the last line.

3.7.3. Options

Figure 14.61. Tool Options Dialog

3/28/25, 12:27 PM 3.7. Paintbrush



Normally, tool options are displayed in a window attached under the Toolbox as soon as you activate a tool. If they are not, you can access them from the main menu through Windows \rightarrow Dockable Windows \rightarrow Tool Options which opens the option window of the selected tool. The available tool options can also be accessed by double clicking the corresponding tool icon in the Toolbox.

3/28/25, 12:27 PM 3.7. Paintbrush

Mode, Opacity, Brush, Size, Aspect Ratio, Angle, Spacing, Hardness, Force, Dynamics, Dynamics Options, Apply Jitter, Smooth Stroke, Lock brush to view, Incremental, Expand Layers

See the Common Paint Tool Options for a description of tool options that apply to many or all paint tools.



3.6. Pencil





3.8. Eraser

3.8. Eraser



3. Paint Tools



3.8. Eraser

The Eraser is used to remove areas of color from the current layer or from a selection of this layer. If the Eraser is used on something that does not support transparency (a selection mask channel, a layer mask, or the Background layer if it lacks an alpha channel), then erasing will show the background color, as displayed in the Color Area of the Toolbox (in case of a mask, the selection will be modified). Otherwise, erasing will produce either partial or full transparency, depending on the settings for the tool options. You can learn more on how to add an alpha channel to a layer in Section 7.36, "Add Alpha Channel".

Figure 14.62. Eraser and Alpha channel





The <u>Background Color</u> is White. The image has no Alpha channel. The Eraser (Opacity 100%) shows the white background color.



The image has an Alpha channel. The Eraser shows transparency using a checkerboard pattern.

If you need to erase some group of pixels completely, leaving no trace behind of their previous contents, you should check the "Hard edge" box in the Tool Options. Otherwise, sub-pixel brush placement will cause partial erasure at the edges of the brush-stroke, even if you use a hard-edged brush.



Tip

If you use GIMP with a tablet, you may find it convenient to treat the reverse end of the stylus as an eraser. To make this work, all you need to do is click the reverse end on the Eraser tool in the Toolbox. Because each end of the stylus is treated as a separate input device, and each input device has its own separate tool assignment, the reverse end will then continue to function as an Eraser as long as you don't select a different tool with it.

3.8.1. Activating the Tool

There are different possibilities to activate the tool:

- From the main menu: Tools \rightarrow Paint Tools \rightarrow Eraser.
- By pressing the | Shift |+ | E | keyboard shortcut.

3.8.2. Key modifiers

See the Section 3.1, "Common Features" for a description of key modifiers that have the same effect on all paint tools.

Ctrl

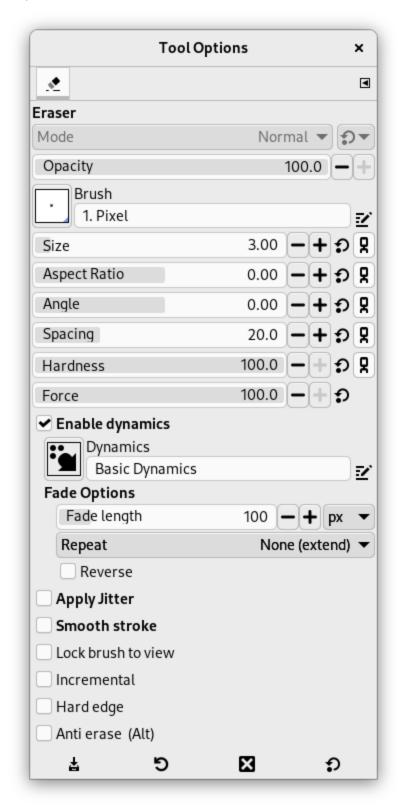
For the Eraser, holding down the **Ctrl** key puts it into "color picker" mode, so that it selects the color of any pixel it is clicked on. Unlike other brush tools, however, the Eraser sets the *background* color rather than the foreground color. This is more useful, because on drawables that don't support transparency, erasing replaces the erased areas with the current background color.

Alt

For the Eraser, holding down the Alt key switches it into "anti-erase" mode, as described below in the Tool Options section. Note that on some systems, the Alt key is trapped by the Window Manager. If this happens to you, you may be able to use Alt + Shift instead.

3.8.3. Options

Figure 14.63. Tool Options Dialog



Normally, tool options are displayed in a window attached under the Toolbox as soon as you activate a tool. If they are not, you can access them from the main menu through Windows \rightarrow Dockable Windows \rightarrow Tool Options which opens the option window of the selected tool. The available tool options can also be accessed by double clicking the corresponding tool icon in the Toolbox.

Mode, Brush, Size, Aspect Ratio, Angle, Spacing, Hardness, Force, Dynamics, Dynamics Options, Apply Jitter, Smooth Stroke, Lock brush size to view, Incremental

See the <u>Common Paint Tool Options</u> for a description of tool options that apply to many or all paint tools.

Opacity

The Opacity slider, in spite of its name, in this tool determines the "strength" of the tool. Thus, when you erase on a layer with an alpha channel, the higher the opacity you use, the more transparency you get!

Hard Edge

This option avoids partial erasure at the edges of the brush-stroke. See above.

Anti Erase

The Anti Erase option of the Erase tool can un-erase areas of an image, even if they are completely transparent. This feature only works when used on layers with an alpha channel. In addition to the check-button in the Tool Options, it can also be activated on-the-fly by holding down the Alt key (or, if the Alt key is trapped by the Window Manager, by holding down Alt + Shift).



Note

To understand how anti-erasing is possible, you should realize that erasing (or cutting, for that matter) only affects the alpha channel, not the RGB channels that contain the image data. Even if the result is completely transparent, the RGB data is still there, you simply can't see it. Anti-erasing increases the alpha value so that you can see the RGB data once again.



Tip

You can use the Eraser tool to change the shape of a floating selection. By erasing, you can trim the edges of the selection.







3.7. Paintbrush



3.9. Airbrush

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3.9. Airbrush



3. Paint Tools



3.9. Airbrush

The Airbrush tool emulates a traditional airbrush. This tool is suitable for painting soft areas of color.

3.9.1. Activating the Tool

There are different possibilities to activate the tool:

- From the main menu: Tools → PaintTools → Airbrush.
- By clicking the tool icon win the Toolbox.
- By pressing the | A | keyboard shortcut.

3.9.2. Key modifiers

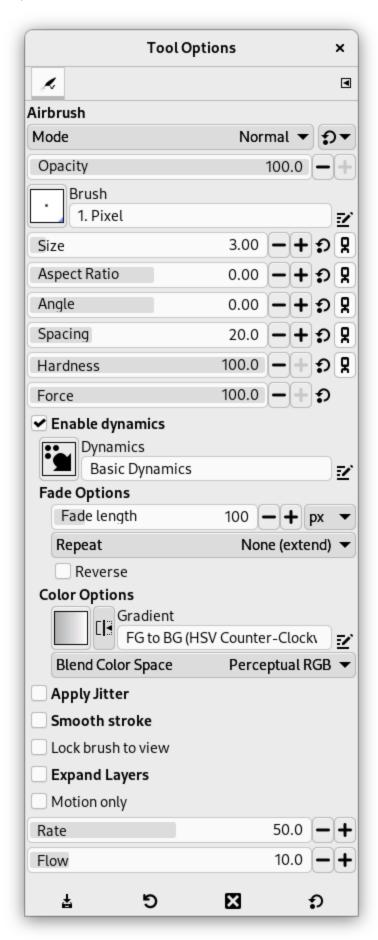
Ctrl changes the airbrush to a Color Picker.

Shift
Shift places the airbrush into straight line mode. Holding Shift while clicking the mouse Left Button will generate a straight line. Consecutive clicks will continue drawing straight lines that originate from the end of the last line.

3.9.3. Options

Figure 14.64. Tool Options Dialog

3/28/25, 12:27 PM 3.9. Airbrush



3/28/25, 12:27 PM 3.9. Airbrush

Normally, tool options are displayed in a window attached under the Toolbox as soon as you activate a tool. If they are not, you can access them from the main menu through Windows \rightarrow Dockable Windows \rightarrow Tool Options which opens the option window of the selected tool. The available tool options can also be accessed by double clicking the corresponding tool icon in the Toolbox.

Mode, Opacity, Brush, Size, Aspect Ratio, Angle, Spacing, Hardness, Force, Dynamics, Dynamics Options, Apply Jitter, Smooth Stroke, Lock brush to view, Expand Layers

See the Common Paint Tool Options for a description of tool options that apply to many or all paint tools.

Motion only

If this option is checked, the airbrush paints only when it moves.

Rate

The Rate slider adjusts the speed of color application that the airbrush paints. A higher setting will produce darker brush strokes in a shorter amount of time.

Flow

This slider controls the amount of color that the airbrush paints. A higher setting here will result in darker strokes.



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3.10. lnk



3. Paint Tools



3.10. lnk

The lnk tool uses a simulation of an ink pen with a controllable nib to paint solid brush strokes with an antialiased edge. The size, shape and angle of the nib can be set to determine how the strokes will be rendered.

3.10.1. Activating the Tool

There are different possibilities to activate the tool:

- From the main menu: Tools \rightarrow Paint Tools \rightarrow Ink.
- By clicking the tool icon in the Toolbox.
- By pressing the K keyboard shortcut.

3.10.2. Key modifiers

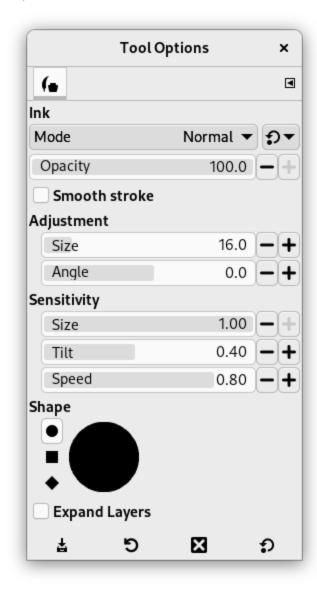


This key changes the nib to a Color Picker.

3.10.3. Options

Figure 14.65. Tool Options Dialog

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Normally, tool options are displayed in a window attached under the Toolbox as soon as you activate a tool. If they are not, you can access them from the main menu through Windows \rightarrow Dockable Windows \rightarrow Tool Options which opens the option window of the selected tool. The available tool options can also be accessed by double clicking the corresponding tool icon in the Toolbox.

Mode, Opacity, Expand Layers

See the Common Paint Tool Options for a description of tool options that apply to many or all paint tools.

Adjustment

Size

Controls the apparent width of the pen's nib with values that ranges from 0 (very thin) to 200 (very thick).

Angle

This controls the apparent angle of the pen's nib relative to horizontal.

Sensitivity

Size

This controls the size of the nib, from minimum to maximum. Note that a size of 0 does not result in a nib of size zero, but rather a nib of minimum size.

Tilt

Controls the apparent tilt of the nib relative to horizontal. This control and the Angle control described above are interrelated. Experimentation is the best means of learning how to use them.

Speed

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This controls the effective size of the nib as a function of drawing speed. That is, as with a physical pen, the faster you draw, the narrower the line.

Type and Shape

Type

There are three nib shapes to choose from: circle, square, and diamond.

Shape

The geometry of the nib type can be adjusted by keeping the mouse button pressed while on the small square at the center of the Shape icon and moving it around.





1



3.9. Airbrush



3.11. MyPaint Brush

3.11. MyPaint Brush



3. Paint Tools



3.11. MyPaint Brush

MyPaint is a free painting program that comes with a lot of brushes. Libmypaint has been modified in 2016 in a form that can be used by other programs. GIMP can use these brushes.

You can find many collections of MyPaint brushes throughout the Web, in a compressed format, often in a .zip file. Unzip this file into a temp folder.

3.11.1. Installing MyPaint Brushes

First go to Preferences → Folders → MyPaint Brushes. There, you will find the path to your personal Mypaint folder.

- Under Linux: /home/YourUserName/.mypaint/brushes. Take good note it is a hidden directory.
 Open your file browser. Check the option "Show hidden files". Go to your personal MyPaint folder. If it does not exist yet, you have to create it, with the brushes directory inside.
 Copy-paste all the unzipped files from your temp folder to home/YourUserName/.mypaint/brushes.
- Under Windows 10: C:\Users\your-user-name\.mypaint\brushes. Click on this item to select it and click on the icon that opens a file browser. In the root of your home folder, create a new folder "mypaint". The MyPaint path in Preferences becomes C:\Users\your-user-name\mypaint.

 Copy-paste all the unzipped files from your temp folder to C:\Users\your-user-name\mypaint.

Activate the tool as below: you should have got a MyPaint brush icon in the tool options dialog. Click on this icon to display all MyPaint brushes.

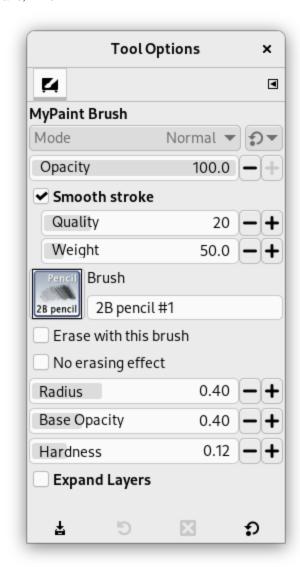
3.11.2. Activating the Tool

There are different possibilities to activate the tool:

- From the main menu: Tools → Paint Tools → MyPaint Brush.
- By clicking the tool icon in the Toolbox.
- By pressing the Y keyboard shortcut.

3.11.3. Options

Figure 14.66. Tool Options Dialog



Normally, tool options are displayed in a window attached under the Toolbox as soon as you activate a tool. If they are not, you can access them from the main menu through Windows \rightarrow Dockable Windows \rightarrow Tool Options which opens the option window of the selected tool. The available tool options can also be accessed by double clicking the corresponding tool icon in the Toolbox.

Options may act somewhat differently according to the MyPaint brush you use.

Opacity

To set the opacity of the brush (0.0 - 100.0). Opacity depends on a base: please see below.

Smooth stroke

If this option is checked, strokes are smoother. Two options are available:

- Quality: Depth of smoothing.
- Weight: Gravity of the pen.

Brush

The icon of the active brush is displayed. If you click on it, the MyPaint brushes list is displayed and you can select another brush

Figure 14.67. A collection of MyPaint brushes



In the bottom bar of the dialog, you have buttons for smaller or larger icons, and view as list or as grid. The right most button opens the <u>MyPaint Brushes Dialog</u>.

Erase with this brush

If this option is checked, the brush acts as an eraser. As for the Eraser tool, erased areas are transparent if there is an alpha layer, have the background color if there is no alpha layer.

Radius

To set the radius of the brush.

Base opacity

These values (0.00 - 2.00) are multiplying factors: if, for example, you set this option to 0.50, the maximal opacity becomes 100 * 0.50 = 50, although it is still 100.0 in the Opacity option.

Table 14.3. Base opacity example

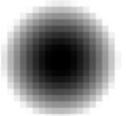
Base Opacity	Opacity		
	100	50	25
1.00	=100	=50	=25
0.50	=50	=25	=12.5
2.00	=100	=100	=50

Base opacity can exceed 1.00 up to 2.00. Of course, opacity can not exceed 100. In the example, you can see that an opacity option above 50 (100 * 2.00 = 200) is actually an opacity at 100, and 25 * 200 = 50 is equivalent to 50 * 1.00 = 50. But this possibility is useful when your Mypaint brush has a default opacity less than 100.

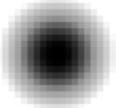
Hardness

The harder the brush the sharper the brush. When you reduce hardness, the Mypaint brush may not act if the brush size is too small.

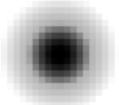
Figure 14.68. Hardness example



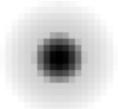
1.00



0.90



0.80



0.70

Expand Layers

See the Common Paint Tool Options for a description of tool options that apply to many or all paint tools.



3.10. lnk







3.12. Clone

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3.12. Clone



3. Paint Tools



3.12. Clone

The Clone tool uses the current brush to copy from an image or pattern. It has many uses: one of the most important is to repair problem areas in digital photos, by "painting over" them with pixel data from other areas. This technique takes a while to learn, but in the hands of a skilled user it is very powerful. Another important use is to draw patterned lines or curves: see <u>Patterns</u> for examples.

If you want to clone from an <u>image</u>, instead of a pattern, you must tell GIMP which image you want to copy from. You do this by holding down the **Ctrl** key and clicking in the desired source image. Until you have set the source in this

way, you will not be able to paint with the Clone tool: the tool cursor tells you this by showing ... If you clone from a pattern, the pattern is *tiled*; that is, when the point you are copying from moves past one of the edges, it jumps to the opposite edge and continues, as though the pattern were repeated side-by-side, indefinitely. When you clone from an image this does not happen: if you go beyond the edges of the source, the Clone tool stops producing any changes.

You can clone from any drawable (that is, any layer, layer mask, or channel) to any other drawable. You can even clone to or from the selection mask, by switching to Quick Mask mode. If this means copying colors that the target does not support (for example, cloning from an RGB layer to an Indexed layer or a layer mask), then the colors will be converted to the closest possible approximations.

3.12.1. Activating the Tool

There are different possibilities to activate the tool:

- From the main menu: Tools → Paint Tools → Clone.
- By clicking the tool icon in the Toolbox.
- By pressing the C keyboard shortcut.

3.12.2. Key modifiers

See the Paint tools key modifiers for a description of key modifiers that have the same effect on all paint tools.

Ctrl

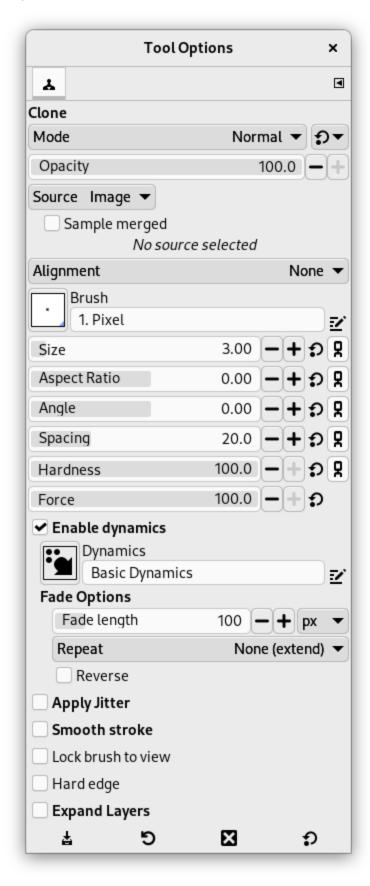
The Ctrl key is used to select the source, if you are cloning from an image: it has no effect if you are cloning from a pattern. You can clone from any layer of any image, by clicking on the image display, with the Ctrl key held down, while the layer is active (as shown in the Layers dialog). If Alignment is set to None, Aligned, or Fixed in tool options, then the point you click on becomes the origin for cloning: the image data at that point will be used when you first begin painting with the Clone tool. In source-selection mode, the cursor changes to a reticle cross



3.12.3. Options

Figure 14.69. Tool Options Dialog

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Normally, tool options are displayed in a window attached under the Toolbox as soon as you activate a tool. If they are not, you can access them from the main menu through Windows \rightarrow Dockable Windows \rightarrow Tool Options which opens the option window of the selected tool.

Mode, Opacity, Brush, Size, Aspect Ratio, Angle, Spacing, Hardness, Force, Dynamics, Dynamics Options, Apply Jitter, Smooth Stroke, Lock brush to view, Expand Layers

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See the Common Paint Tool Options for a description of tool options that apply to many or all paint tools.

Source

The choice you make here determines whether data will be copied from the pattern shown above, or from one of the images you have open.

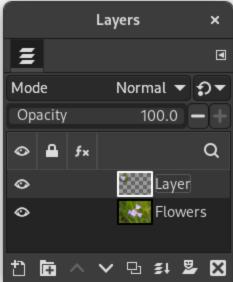
Image

If you choose Image source, you must tell GIMP which layer to use as the source, by Ctrl clicking on it, before you can paint with the tool.

Sample merged: If you enable this option, sampling is not calculated only from the values of the active layer, but from all visible layers.

For more information, see the Glossary entry.





Cloned pixels are in the new layer.

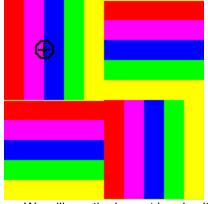
Pattern

Clicking on the pattern symbol brings up the Patterns dialog, which you can use to select the pattern to paint with. This option is only relevant if you are cloning from a Pattern source.

Alignment

The Alignment mode defines the relation between the brush position and the source position. In the following examples, we will use a source image where the sample to be cloned will be taken, and a destination image where the sample will be cloned (it could be a layer in the source image)

Figure 14.70. Original images for clone alignment



We will use the largest brush with the Pencil tool. The source is represented here with a ringed cross.

3/28/25, 12:28 PM 3,12, Clone



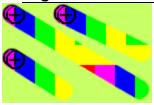
An image with a solid background only. We shall draw three cloning strokes successively.

None

In this mode, each brushstroke is treated separately. For each stroke, the point where you first click is copied from the source origin; there is no relationship between one brush stroke and another. In non-aligned mode, different brush strokes will usually clash if they intersect each other.

Example below: At every new brush stroke, the source goes back to its first position. The same sample is always cloned.

Figure 14.71. "None" clone alignment

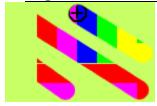


Aligned

In this mode, the first click you make when painting sets the offset between the source origin and the cloned result, and all subsequent brushstrokes use the same offset. Thus, you can use as many brushstrokes as you like, and they will all mesh smoothly with one another.

If you want to change the offset, select a new source origin by clicking with the **Ctrl** key pressed. In the example below, at every new brush stroke, the source keeps the same offset it had with the previous brush stroke. So, there is no cloning offset for the first brush stroke. Here, for the following strokes, the source ends up out of the source image canvas; hence the truncated aspect.

Figure 14.72. "Aligned" clone alignment



Registered

The "Registered" mode is different from the other alignment modes. When you copy from an image, a Ctrl click will register a source layer. Then painting in a target layer will clone each corresponding pixel (pixel with the same offset) from the source layer. This is useful when you want to clone parts of an image from one layer to another layer within the same image. (But remember that you can also clone from one image to another image.)

At every brush stroke, the source adopts the position of the mouse pointer in the destination layer. In the following example, the destination layer is smaller than the source layer; so, there is no truncated aspect.

Figure 14.73. "Registered" clone alignment



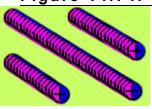
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Fixed

Using this mode you will paint with the source origin, unlike the modes None or Aligned even when drawing a line. The source will not be moved.

See that the source remains fixed. The same small sample is reproduced identically in a tightened way:

Figure 14.74. "Fixed" clone alignment



Hard edge

This option gives a hard contour to the cloned area.

3.12.4. Further Information

Transparency

The effects of the Clone tool on transparency are a bit complicated. You cannot clone transparency: if you try to clone from a transparent source, nothing happens to the target. If you clone from a partially transparent source, the effect is weighted by the opacity of the source. So, assuming 100% opacity and a hard brush:

- Cloning translucent black onto white produces gray.
- Cloning translucent black onto black produces black.
- Cloning translucent white onto white produces white.
- Cloning translucent white onto black produces gray.

Cloning can never increase transparency, but, unless "keep transparency" is turned on for the layer, it can reduce it. Cloning an opaque area onto a translucent area produces an opaque result; cloning a translucent area onto another translucent area causes an increase in opacity.

"Filter" brushes

There are a few non-obvious ways to use the Clone tool to obtain powerful effects. One thing you can do is to create "Filter brushes", that is, create the effect of applying a filter with a brush. To do this, duplicate the layer you want to work on, and apply the filter to the copy. Then activate the Clone tool, setting Source to "Image source" and Alignment to "Registered". Ctrl -click on the filtered layer to set it as the source, and paint on the original layer: you will then in effect be painting the filtered image data onto the original layer.

History brush

You can use a similar approach to imitate Photoshop's "History brush", which allows you to selectively undo or redo changes using a brush. To do this, start by duplicating the image; then, in the original, go back to the desired state in the image's history, either by undoing or by using the Undo History dialog. (This must be done in the original, not the copy, because duplicating an image does not duplicate the Undo history.) Now activate the Clone tool, setting Source to "Image source" and Alignment to "Registered". Ctrl -click on a layer from one image, and paint on the corresponding layer from the other image. Depending on how you do it, this gives you either an "undo brush" or a "redo brush".



3.11. MyPaint Brush







3.13. Heal

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3.13. Heal



3. Paint Tools



3.13. Heal

This tool was once described as "The healing brush looks like a smart clone tool on steroids". And indeed the Healing Tool is a close relative to the Clone Tool, but it is more smart to remove small failures in images. A typical usage is the removal of wrinkles in photographs. To do so, pixels are not simply copied from source to destination, but the area around the destination is taken into account before cloning is applied. The algorithm used for this, is described in a scientific paper by Todor Georgiev [GEORGIEV01].

To use it, first choose a brush with a size adapted to the defect. Then Ctrl click on the area you want to reproduce. Release the Ctrl key and drag the sample to the defect. Click. If the defect is slight, not very different from its surrounding, it will be corrected as soon. Else, you can correct it with repeated clicks, but with a risk of daubing.

3.13.1. Activating the Tool

There are different possibilities to activate the tool:

- From the main menu: Tools \rightarrow Paint tools \rightarrow Heal.
- By clicking the tool icon 🧖 in the Toolbox.
- By pressing the H keyboard shortcut.

3.13.2. Key modifiers

Ctrl

The Ctrl key is used to select the source. You can heal from any layer of any image, by clicking on the image display, with the Ctrl key held down, while the layer is active (as shown in the Layers dialog). If Alignment is set to "Non-aligned" or "Aligned" in Tool Options, then the point you click on becomes the origin for healing: the image data at that point will be used when you first begin painting with the Heal tool. In source-selection mode, the cursor changes to a crosshair-symbol.

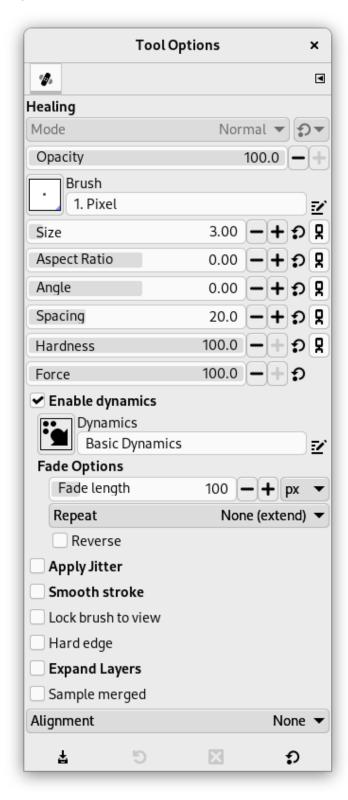
Shift

Once the source is set, if you press this key, you will see a thin line connecting the previously clicked point with the current pointer location. If you click again, while going on holding the **Shift** key down, the tool will "heal" along this line.

3.13.3. Options

Figure 14.75. Tool Options Dialog

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Normally, tool options are displayed in a window attached under the Toolbox as soon as you activate a tool. If they are not, you can access them from the main menu through Windows \rightarrow Dockable Windows \rightarrow Tool Options which opens the option window of the selected tool. The available tool options can also be accessed by double clicking the corresponding tool icon in the Toolbox.

Mode, Opacity, Brush, Size, Aspect Ratio, Angle, Spacing, Hardness, Force, Dynamics, Dynamics Options, Apply Jitter, Smooth Stroke, Lock brush to view, Expand Layers

See the Common Paint Tool Options for a description of tool options that apply to many or all paint tools.

Hard edge

This option gives a hard contour to the healed area.

Sample merged

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> If you enable this option, sampling is not calculated only from the values of the active layer, but from all visible layers. For more information, see the Glossary entry.

Alignment

This option is described in Clone tool.

3.13.4. Healing is not cloning

Although the Heal tool has common features with the Clone tool on using, the result is quite different.

Figure 14.76. Comparing "Clone" and "Heal"



Cloning on the left. All colors are transferred.

Healing on the right. Colors are much less transferred, especially on borders where surrounding pixels of destination are taken in account.









3.14. Perspective Clone

3.14. Perspective Clone



3. Paint Tools



3.14. Perspective Clone

This tool allows you to clone according to the perspective you want. First, set the wanted vanishing lines in the same way as with the <u>Perspective</u> tool. Then copy the source area in the same way as with the <u>Clone</u> tool.

3.14.1. Activating the Tool

There are different possibilities to activate the tool:

- From the main menu: Tools → Paint tools → Perspective Clone.
- By clicking the tool icon ⁴ in the Toolbox.

3.14.2. Key modifiers

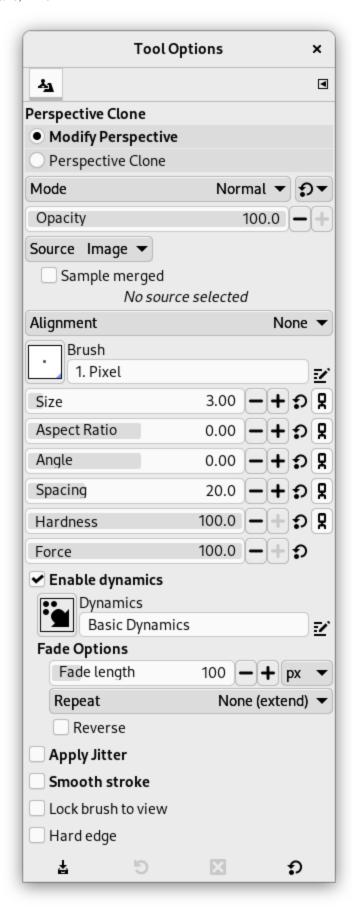
Ctrl -click allows you to select a new clone source.

Shift

When the source is set and you press this key, you will see a thin line connecting the previously clicked point with the current pointer location. If you click again, while continuing to hold down the Shift key, the tool will clone along this line. Particularly useful when cloning from a pattern.

3.14.3. Options

Figure 14.77. Tool Options Dialog



Normally, tool options are displayed in a window attached under the Toolbox as soon as you activate a tool. If they are not, you can access them from the main menu through Windows \rightarrow Dockable Windows \rightarrow Tool Options which opens the option window of the selected tool. The available tool options can also be accessed by double clicking the corresponding tool icon in the Toolbox.

Operating mode

When using this tool you first have to choose Modify Perspective. This works like the tool <u>perspective</u>. Then you choose Perspective Clone and use this in the same way as the <u>Clone</u> tool.

Mode, Opacity, Brush, Size, Aspect Ratio, Angle, Spacing, Hardness, Force, Dynamics, Dynamics Options, Apply Jitter, Smooth Stroke, Lock brush to view

See the Common Paint Tool Options for a description of tool options that apply to many or all paint tools.

Source, Alignment

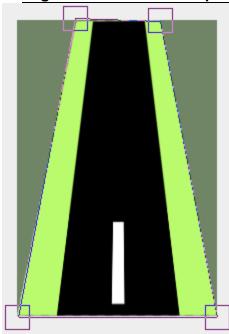
This are the same as in the tool Clone.

Hard edge

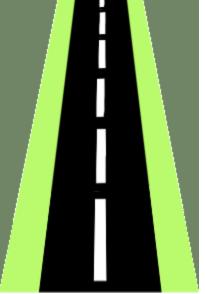
This option gives a hard contour to the cloned area.

3.14.4. Example

Figure 14.78. "Perspective Clone" example



The "Modify Perspective Plane" is checked. Vanishing lines have been placed.



The "Perspective Clone" option is checked. The white rectangle has been cloned. You see it goes smaller going away.



3.13. Heal

1

3.15. Blur/Sharpen

3.15. Blur/Sharpen



3. Paint Tools



3.15. Blur/Sharpen

The Blur/Sharpen tool uses the current brush to locally blur or sharpen your image. Blurring with it can be useful if some element of your image stands out too much, and you would like to soften it. If you want to blur a whole layer, or a large part of one, you will probably be better off using one of the <u>Blur Filters</u>. The direction of a brushstroke has no effect: if you want directional blurring, use the Smudge tool.

In "Sharpen" mode, the tool works by increasing the contrast where the brush is applied. A little bit of this may be useful, but over-application will produce noise. Some of the <u>Enhancement Filters</u>, particularly the <u>Unsharp Mask</u>, do a much cleaner job of sharpening areas of a layer.



Tip

You can create a more sophisticated sharpening brush using the Clone tool. To do this, start by duplicating the layer you want to work on, and run a sharpening filter, such as Unsharp Mask, on the copy. Then activate the Clone tool, and in its Tool Options set Source to "Image source" and Alignment to "Registered". Set the Opacity to a modest value, such as 10. Then Ctrl -click on the copy to make it the source image. If you now paint on the original layer, you will mix together, where the brush is applied, the sharpened version with the unsharpened version.

Both blurring and sharpening work incrementally: moving the brush repeatedly over an area will increase the effect with each additional pass. The Rate control allows you to determine how quickly the modifications accumulate. The Opacity control, however, can be used to limit the amount of blurring that can be produced by a single brushstroke, regardless of how many passes are made with it.

3.15.1. Activating the Tool

There are different possibilities to activate the tool:

- From the main menu: Tools \rightarrow Paint tools \rightarrow Blur/Sharpen.
- By pressing the | Shift |+ U | keyboard shortcut.

3.15.2. Key modifiers

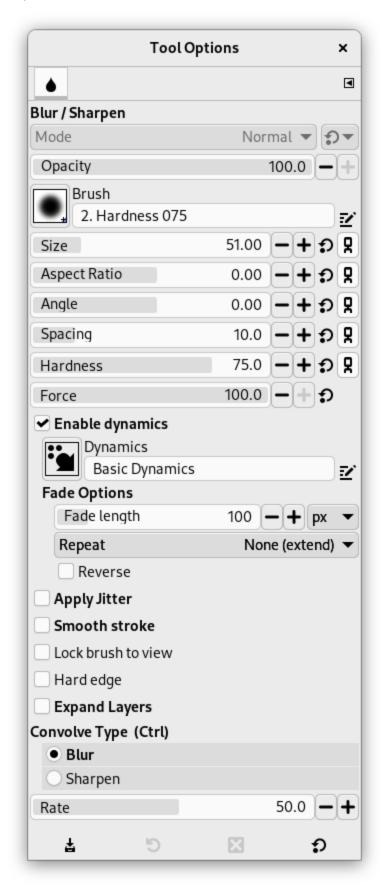
See the Paint Tools' Common Features for a description of key modifiers that have the same effect on all paint tools.

Ctrl

Holding down the Ctrl key toggles between Blur and Sharpen modes; it reverses the setting shown in the Tool Options.

3.15.3. Options

Figure 14.79. Tool Options Dialog



Normally, tool options are displayed in a window attached under the Toolbox as soon as you activate a tool. If they are not, you can access them from the main menu through Windows \rightarrow Dockable Windows \rightarrow Tool Options which opens the option window of the selected tool. The available tool options can also be accessed by double clicking the corresponding tool icon in the Toolbox.

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Mode, Opacity, Brush, Size, Aspect Ratio, Angle, Spacing, Hardness, Force, Dynamics, Dynamics Options, Apply Jitter, Smooth Stroke, Lock brush to view, Expand Layers

See the Common Paint Tool Options for a description of tool options that apply to many or all paint tools.

Hard edge

This option gives a hard contour to the blurred/sharpened area.

Convolve Type

Blur mode causes each pixel affected by the brush to be blended with neighboring pixels, thereby increasing the similarity of pixels inside the brushstroke area. Sharpen mode causes each pixel to become more different from its neighbors than it previously was: it increases contrast inside the brushstroke area. Too much Sharpen ends in an ugly flocculation aspect. Whatever setting you choose here, you can reverse it on-the-fly by holding down the Ctrl key.

"Convolve" refers to a mathematical method using matrices.

Rate

The Rate slider sets the strength of the Blur/Sharpen effect.







3.14. Perspective Clone



3.16. Smudge

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3.16. Smudge



3. Paint Tools



3.16. Smudge

The Smudge tool evokes finger painting. It works in two ways:

- If the Flow option is set to 0.00 (default), the Smudge tool uses the current brush to smudge colors on the active layer or a selection. It takes color in passing and uses it to mix it to the next colors it meets.
- When the Flow option is more than 0.00, the Smudge tool works as a brush using the foreground color of the toolbox and blend it with the underlying color.

3.16.1. Activating the Tool

There are different possibilities to activate the tool:

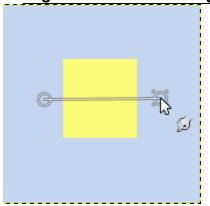
- From the main menu: Tools → Paint Tools → Smudge.
- By clicking the tool icon p in the Toolbox.
- By pressing the | S | keyboard shortcut.

3.16.2. Key modifiers

Shift

The **Shift** key places the smudge tool into straight line mode. Holding **Shift** while clicking the mouse Left Button will smudge in a straight line. Consecutive clicks will continue smudging in straight lines that originate from the end of the last line.

Figure 14.80. Smudge tool



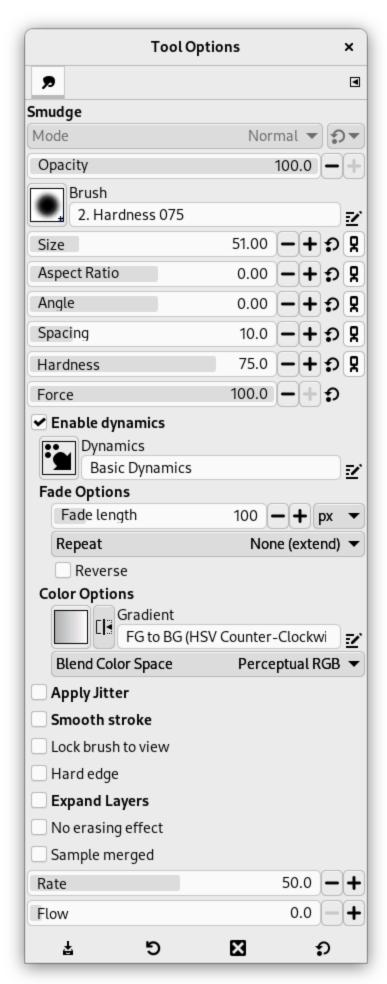
Shift click and drag to create line

Ctrl

Using Ctrl with Shift, you can constrain the angle between two successive lines to vary by steps of 15°.

3.16.3. Options

Figure 14.81. Tool Options Dialog



Normally, tool options are displayed in a window attached under the Toolbox as soon as you activate a tool. If they are not, you can access them from the main menu through Windows \rightarrow Dockable Windows \rightarrow Tool Options which opens the option window of the selected tool. The available tool options can also be accessed by double clicking the corresponding tool icon in the Toolbox.

Opacity, Brush, Size, Aspect ratio, Angle, Spacing, Hardness, Force, Dynamics, Dynamics Options, Apply Jitter, Smooth stroke, Lock brush to view, Expand Layers

See the Common Paint Tool Options for a description of tool options that apply to many or all paint tools.

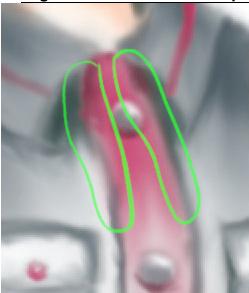
Hard edge

This option gives a hard contour to the smudged area.

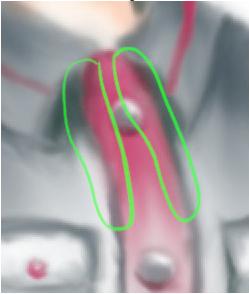
No erasing effect

If smudging will decrease alpha of some pixels; this alpha is not decreased if this option is checked, and so pixels are not erased. This is useful to fill a gap between two color areas.

Figure 14.82. An example of "No erasing"



Without "No erasing effect"



With "No erasing effect"

Sample merged

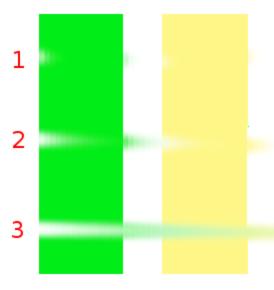
If you enable this option, sampling is not calculated only from the values of the active layer, but from all visible layers.

For more information, see the Glossary entry.

Rate

This option could be called "Smudge length" since it sets the length of the smudging effect in a stroke.

Figure 14.83. Rate example

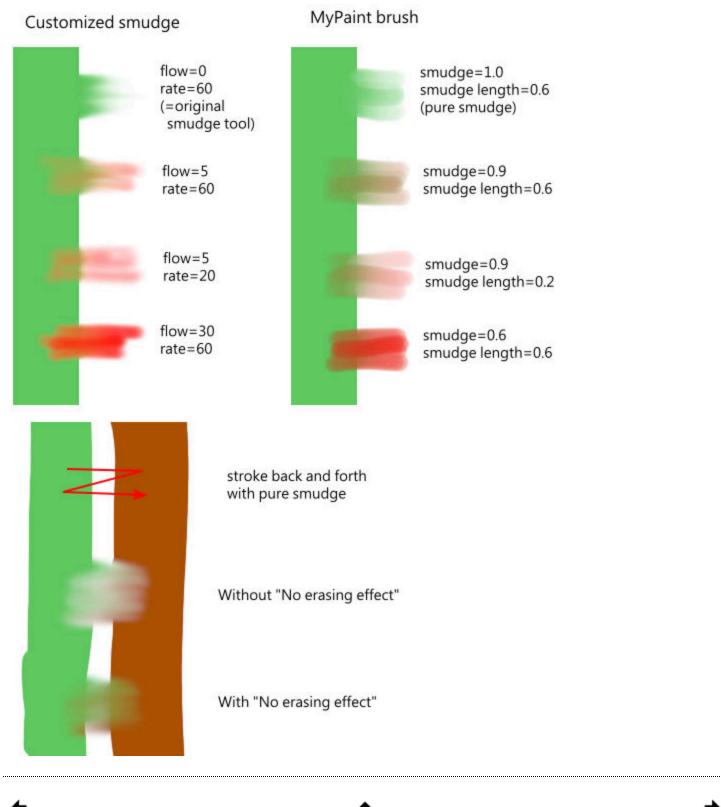


1: Rate=20 2: Rate=60 3: Rate=90

Flow

We already saw the different behavior of the "Flow" option when it is set to 0.00 (works as the original Smudge tool) and set to more than 0.00 (uses the foreground color for smudging).

Here are comments and examples for the "No erasing effect" and "Flow" options from gimp-forum.net:



Report a bug in GIMP Report a documentation error

3.15. Blur/Sharpen

3.17. Dodge/Burn

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3.17. Dodge/Burn



3. Paint Tools



3.17. Dodge/Burn

The Dodge or Burn tool uses the current brush to lighten or darken the colors in your image. The mode will determine which type of pixels are affected.

3.17.1. Activating the Tool

There are different possibilities to activate the tool:

- From the main menu: Tools \rightarrow Paint Tools \rightarrow Dodge / Burn.
- By clicking the tool icon **d** in the Toolbox.
- By pressing the | Shift |+ D | keyboard shortcut.

3.17.2. Key modifiers

Toggle between dodge or burn types. The type will remain switched until Ctrl is released.

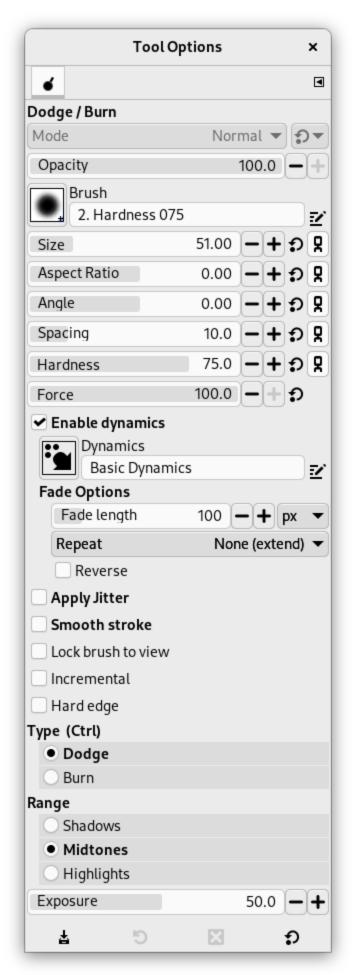
Shift

Shift places the Dodge or Burn tool into straight line mode. Holding Shift while clicking the mouse Left Button will Dodge or Burn in a straight line. Consecutive clicks will continue Dodge or Burn in straight lines that originate from the end of the last line.

3.17.3. Options

Figure 14.84. Tool Options Dialog

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Normally, tool options are displayed in a window attached under the Toolbox as soon as you activate a tool. If they are not, you can access them from the main menu through Windows \rightarrow Dockable Windows \rightarrow Tool Options which opens the option window of the selected tool. The available tool options can also be accessed by double clicking the corresponding tool icon in the Toolbox.

Mode, Opacity, Brush, Size, Aspect Ratio, Angle, Spacing, Hardness, Force, Dynamics, Dynamics Options, Apply Jitter, Smooth Stroke. Lock brush to view. Incremental

See the Common Paint Tool Options for a description of tool options that apply to many or all paint tools.

Hard edge

This option gives a hard contour to the treated area.

Type

The dodge effect lightens colors.

The burn effect darkens colors.

Range

There are three modes:

- Shadows restricts the effect to darkest pixels.
- Midtones restricts the effect to pixels of average tone.
- Highlights restricts the effect to lightest pixels.

Exposure

Exposure defines how much the tool effect will be strong, as a more or less exposed photograph. Default slider is 50 but can vary from 0 to 100.







3.16. Smudge



4. Transform Tools

Report a bug in GIMP Report a documentation error

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4. Transform Tools



Chapter 14. Tools



4. Transform Tools

To access these tools, select Tools \rightarrow Transform Tools from the main menu.

4.1. Common Features

Inside the Transformation tool dialog, you will find tools to modify the presentation of the image or the presentation of an element of the image, selection, layer or path. Each transform tool has an Option dialog and an Information dialog to set parameters.

This category includes the following tools:

- Align and Distribute;
- Move;
- Crop;
- Rotate;
- Scale;
- Shear;
- Perspective;
- 3D Transform;
- <u>Unified Transform;</u>
- Handle Transform;
- <u>Flip;</u>
- Cage Transform;
- Warp Transform.

4.1.1. Options

Some options are shared by several transform tools. We will describe them here. More specific options will be described with their tool.

Transform

GIMP offers four buttons in the Tool Options which let you select which image element the transform tool will work on.



Note

The Transform option for a tool persists after changing tools.



When you activate the first button, the tool works on the active layer. If no selection exists in this layer, the whole layer will be transformed.



When you activate the second button, the tool works on the selection only, or the whole layer if there is no selection.



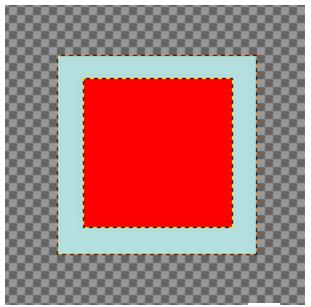
When you activate the third button, the tool works on the active path only.

Image

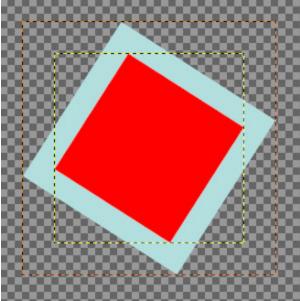
When you activate the fourth button, the transformation is applied to all layers.

Figure 14.85. Example with Rotate

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Two layers, the red one being smaller. View \rightarrow Show All option checked.



Fourth button pressed, Rotate tool applied. Note the adaptation of layer sizes.

Direction

This option sets which way or direction a layer is transformed:

The "Normal (Forward)" mode will transform the image or layer as one might expect. You just use the handles to perform the transformation you want. If you use a grid (see below), the image or layer is transformed according to the shape and position you put the grid into.

"Corrective (Backward)" inverts the direction. Primarily used with the Rotation tool to repair digital images that have some geometric errors (a horizon not horizontal, a wall not vertical, etc). See <u>Section 4.5, "Rotate"</u>. You can link these two options in Rotate, Scale, Perspective, Unified transform and Handle transform tools. This allows moving handles without affecting the transformation, letting you manually readjust their position.

Interpolation

This drop-down list lets you choose the method of the transformation. The chosen method influences the speed and quality, though it also depends on the image and the type of transformation what will work best in each case.

None

The color of each pixel is copied from its closest neighboring pixel in the original image. This often results in aliasing (the "stair-step" effect) and a coarse image, but it is the fastest method. Sometimes this method is called "Nearest Neighbor".

Linear

The color of each pixel is computed as the average color of the four closest pixels in the original image. This gives a satisfactory result for most images and is a good compromise between speed and quality.

Sometimes this method is called "Bilinear".

Cubic

The color of each pixel is computed as the average color of the eight closest pixels in the original image. This usually gives a good result, although there are some cases where it can actually look worse than Linear and it is also slower. Sometimes this method is called "Bicubic".

LoHalo, NoHalo

These methods perform a high quality interpolation. Use the NoHalo method when you downscale an image to less than a half of the original size and the LoHalo method when you do not reduce the size much (rotate, shear).

A "Halo" is an artifact that can be created by interpolation. It reminds of the halo you can get when using <u>Section 4.8, "Sharpen (Unsharp Mask)"</u>. Here is a note from Nicolas Robidoux, the creator of these quality samplers for GEGL and GIMP:

"If haloing is not an issue with your content and use case, which of the two should you try first? (Clearly, if you want to minimize haloing, NoHalo is the ticket.)

If you are reducing an image, LoHalo is generally better.

If your transformation is not an all around reduction, for example if you enlarge, rotate or apply a perspective transformation that keeps portions of the image at the same or higher resolution, I generally prefer NoHalo. This preference, however, changes depending on the image content. If, for example, the image contains text or text-like objects or has significant areas with only a handful of different colours, like old school pixel art, I'd switch to LoHalo. Likewise if the image is quite noisy or marred by compression artifacts (as are most JPEGs found on the web). Conversely, if the image is noise free, very slightly blurry (meaning that when pixel peeking, the lines and interfaces are smeared over two or more pixels), and there are delicate skin tones to be preserved, I'd try NoHalo first. Actually, if I find that colours have not been preserved nicely after transforming an image with LoHalo, I'd immediately switch to NoHalo, even if reducing.

In any case, these recommendations should not be taken as gospel. I still have much to learn and figure out. For example, how best to deal with transparency and different colour spaces is something I'm likely to be thinking about for a while."



Note

You can set the default interpolation method in the <u>Tool Options</u> <u>Preferences</u>.

Clipping

After transformation, the image can be bigger. This option will clip the transformed image to the original image size.

You can choose between several ways to clip:

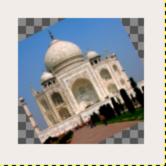
Adjust

Figure 14.86. Original image for examples

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Original image



Rotation applied with "Adjust"



Rotation applied with "Adjust" and canvas enlarged to layer size

With Adjust: the layer is enlarged to contain all the rotated layer. The new layer border is visible; the whole layer becomes visible by using the Image \rightarrow Fit Canvas to Layers command.

Clip

Figure 14.87. Example for Clip



Clip

With Clip: all what exceeds image limits is deleted.

Crop to result

Figure 14.88. Example for Crop to result

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Rotation 45° with Crop to result



The crop limit is marked with red. No transparent area is included.

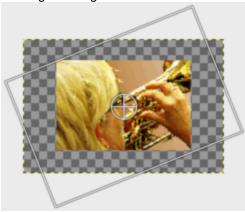
If this option is selected, the image is cropped so that the transparent area, created by the transform operation in corners, will not be included in the resulting image.

Crop with aspect

Figure 14.89. Example for Crop with aspect



Original image



Rotation -22°



The rotated image

This option works like the one described before, but makes sure, that the aspect ratio is maintained.

Show image preview

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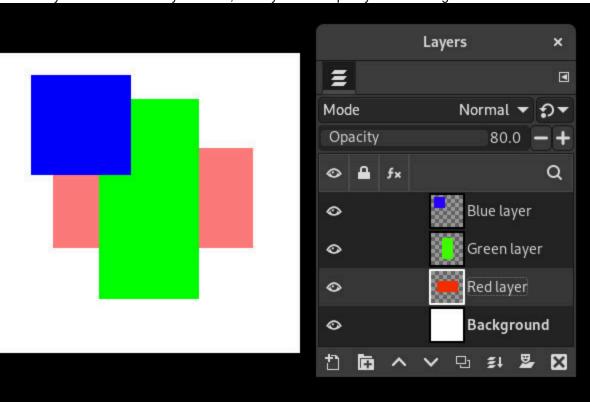
> If this is marked, which is the default setting, the transformed image will be visible on top of the original image or layer. There will also be a slider with which you may select the preview opacity.

Inspired from https://librearts.org/2020/02/gimp-2-10-18-full-review

Show preview as part of the image composition: when you have multiple layers, each one with its own blending mode and opacity, transforming it means it pops up right above every other layer. So in a complex layers composition you can't align this layer against other layers without much trial and error.

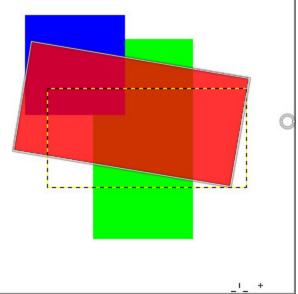
The Composited Preview option removes this problem in favor of rendering the preview of the transformed layer

exactly where it is in the layers stack, exactly with the opacity and blending mode of choice.

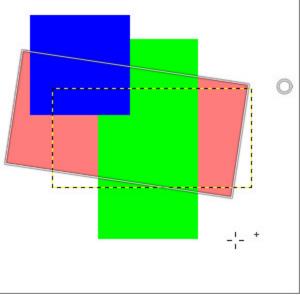


Original image: red layer opacity is 80%.

Figure 14.90. Composited Preview Example



Composited option unchecked: in preview, red layer is above all other layers.



Composited option checked: in preview, red layer is at its right place, like in layer stack.

One sub option is available:

• Synchronous preview: this option is experimental. The idea is to render the preview as soon as you change the transform. So instead of waiting for the mouse to stop moving, it renders the result immediately. If GIMP can render everything fast enough, this means a much smoother and more instant feedback.

But this option also blocks everything until the preview is done rendering. This means, GIMP can become much less responsive, usually when the layer is very large. That's why this is disabled by default.

Guides

This is a drop-down list where you select the type of guide lines which suits your transforming. All the guides use a frame to mark the image's outline in addition to the lines used by the different selections.

No guides

As the name tells you, there are no guides used.

Center lines

Uses one vertical line and one horizontal line crossing each other in the center of the image or layer.

Rule of thirds

Divides the transforming area in nine equal parts by adding two horizontal lines and two vertical lines equally spaced. According to this rule the most interesting parts of the image should be placed at the intersection points.

Rule of fifths

Just as the "Rules of thirds" but divides the area in five by five parts.

Golden sections

Also called "The Golden Ratio". This divides the transforming area in nine parts using a mathematical formula proportioning the parts to each others and to the area to be transformed.

Diagonal lines

Divide the transforming area using diagonally lines.

Number of lines

Puts a rectangular grid with equal numbers of vertically and horizontally lines. The number of lines is set in the slider popping up when this guide is selected.

Line spacing

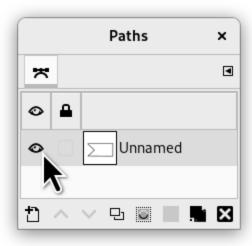
Puts a rectangular grid on the transforming area using the spacing between the lines set in the slider.

4.1.2. Transforming Paths

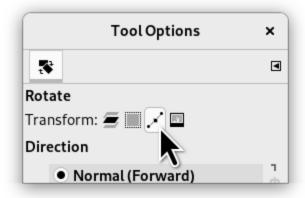
If you for some reason want to transform paths, it is possible to do this using the transform tools.

Figure 14.91. Rotating paths

3/28/25, 12:30 PM 4. Transform Tools



Paths Dialog



Option modus: Path

When the path is drawn go to the Paths dialog and click on the first field before the path outline in the dialog window to get the eye icon visible. Then choose the transformation tool and in the upper part of the option dialog click on the path icon to tell the tool to act on the path.

Do the transformation the usual way and confirm it when finished. It could be a good idea to set the Guides to "No guides" to get the path more recognizable.

When the transformation is finished, choose the path tool and click on the changed path to activate it again for further working on it.







3.17. Dodge/Burn

4.2. Align and Distribute

Report a bug in GIMP Report a documentation error

4.2. Align and Distribute



4. Transform Tools



4.2. Align and Distribute

The Align and Distribute tool is useful to align the image layers with various image objects. When this tool is selected, the mouse pointer turns to a small hand. By clicking on an element of a layer in the image, you choose the layer which will be moved (with Shift + click, you can choose several layers to be aligned); this focused layer has small squares in corners and is called *source*. Then buttons in the dialog become active (they remain active during all the GIMP session): they allow you to select the *target*, i.e other layer, selection, path, the source will be aligned with.

4.2.1. Activating the Tool

There are different possibilities to activate the tool:

- From the main menu: Tools → Transform Tools → Align and Distribute.
- By clicking the tool icon in the Toolbox.
- By pressing the Q keyboard shortcut.

4.2.2. Key modifiers

Shift

You can select several layers by holding Shift when clicking the layers.

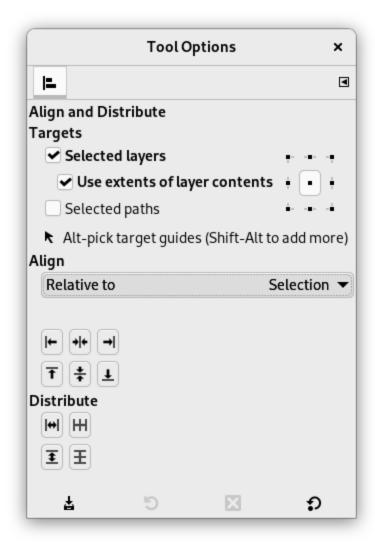


Tip

Sometimes it's easier to choose multiple layers using rubber-banding: click somewhere outside an imaginary rectangular region covering the layers you want to choose. Then drag out that region by moving the pointer, and release the mouse button. Now every layer, which is completely inside the dragged rectangle, is selected. Note that now there is no target "first item" the selected layers can be aligned on.

4.2.3. Options

Figure 14.92. Tool Options Dialog



Normally, tool options are displayed in a window attached under the Toolbox as soon as you activate a tool. If they are not, you can access them from the main menu through Windows \rightarrow Dockable Windows \rightarrow Tool Options which opens the option window of the selected tool. The available tool options can also be accessed by double clicking the corresponding tool icon in the Toolbox.

Align

Relative to:

In this drop-down list, you select the target, the image object the layer will be aligned with.

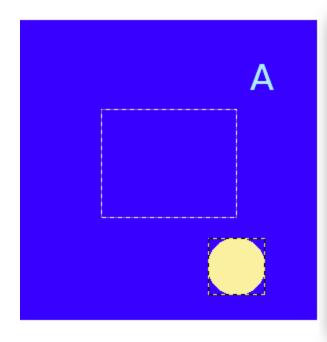
- Image: the image is the target.
- Selection: the selection is the target.
 - Picked reference object: The selected object (layer, path, guide) on the canvas.

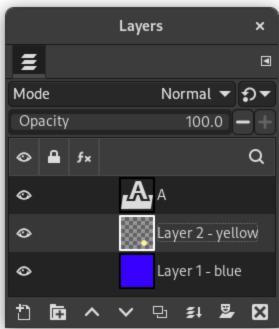
Align buttons

These buttons become active when a target is selected.

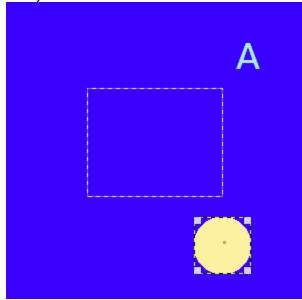
- I ← Align left edge of target: to align left edge of source with left edge of target.
- Align center of target: to align center of source on the *vertical* middle line of target.
- Align right edge of target: to align right edge of source with right edge of target.
- Align top edge of target: to align top edge of source with top edge of target.
- Align middle of target: to align center of source on the *horizontal* middle line of target.
- Align bottom edge of target: to align bottom edge of source with bottom edge of target.

Example

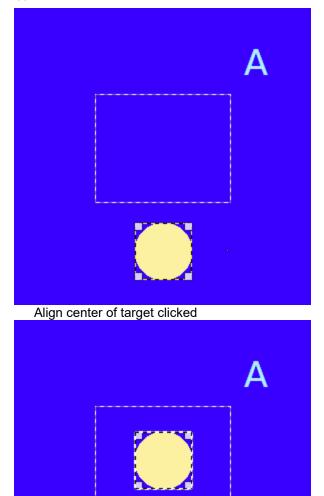




An image with a selection, layer #1 (background) is active, layer #2 is cropped to content, layer #3 is a text layer.



We click on the yellow circle: layer #2 becomes the source. We want to send this source to the middle of the selection: the Relative to option is set to "Selection".



Align middle of target clicked

Distribute

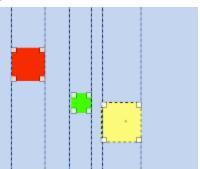
Distribute buttons

These options are used when you have several targets and want to arrange them. Here, layers selected with **Shift** + Click are called "targets". But they are actually sources. "Relative to" options are active to set the target. These transformations are usually relative to "Image".

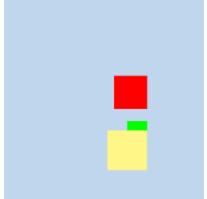
These options work as Align options, but you can distribute sources evenly.

- Distribute targets evenly in the horizontal: to distribute sources evenly horizontally.
- Distribute horizontal centers of targets: to distribute centers of sources with center of the target horizontally.
- Distribute targets evenly in the vertical: to distribute sources evenly vertically.
- Distribute vertical centers of targets: to distribute centers of sources with center of target.

Figure 14.93. Example for the "Distribute" commands



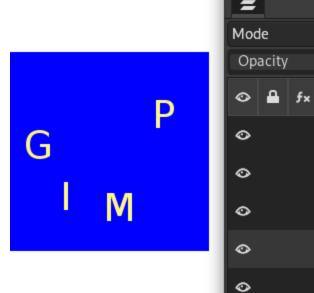
Base image: three layers. → (Distribute right edges of targets) will be used.

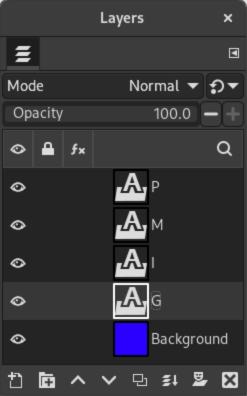


Active layer is yellow (target). All layers are aligned on the right edge of the yellow layer.

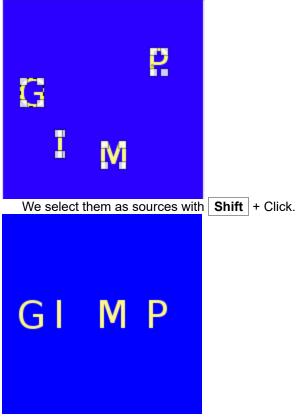
4.2.4. Example

Figure 14.94. Example





Four text layers, with same size. We want to align them at center of image.

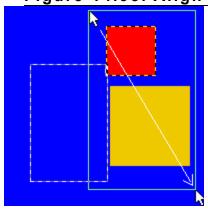


The default target (Relative to) is "Image". We used the 👤 (Distribute vertical centers of targets) command.

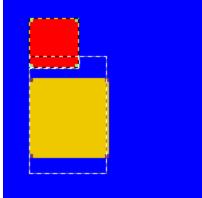


4.2.5. Align using the rubber-band box

Figure 14.95. Align using the rubber-band box



We clicked left from and above the red layer, and dragged out a region covering the red and the yellow layer by moving the pointer towards the bottom right corner.



"Selection" is the reference. After a click on the | button, both layers align with the left side of the selection.



4. Transform Tools



4.3. Move

Report a bug in GIMP Report a documentation error

3/28/25, 12:30 PM 4.3. Move

4.3. Move



4. Transform Tools



4.3. Move

The Move Tool is used to move layers, selections, paths or guides. It works also on texts.

4.3.1. Activating the Tool

There are different possibilities to activate the tool:

- From the main menu: Tools \rightarrow Transform Tools \rightarrow Move.
- By clicking the tool icon

 in the Toolbox.
- By pressing the M keyboard shortcut.
- The Move tool is automatically activated when you create a guide.

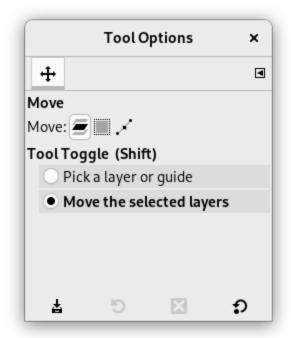


Note

If the function of the $\begin{tabular}{c} \begin{tabular}{l} \begin{tabular}{c} \begin{$

4.3.2. Options

Figure 14.96. Tool Options Dialog



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Normally, tool options are displayed in a window attached under the Toolbox as soon as you activate a tool. If they are not, you can access them from the main menu through Windows \rightarrow Dockable Windows \rightarrow Tool Options which opens the option window of the selected tool. The available tool options can also be accessed by double clicking the corresponding tool icon in the Toolbox.

Move



Note

These options are described in Transform tools common options.

Keep in mind that your Move choice persists after quitting the tool.

Tool toggle (Shift)

If Move is on "Layer" 🗲

Pick a layer or guide

On an image with several layers, the mouse pointer turns to a crosshair when it goes over an element belonging to the current layer. Then you can click-and-drag it. If the mouse pointer has a small hand shape (showing that you do *not* pick an element of the active layer), you will move a non-active layer instead (it becomes the active layer while moving).

If a guide exists on your image, it will turn to red when the mouse pointer goes over. Then it is activated and you can move it.

At the point of intersection of two guides, you can click-and-drag to move them together. This is useful when the guides are used to mark a point, rather than a pair of lines (e.g, as is the case for the mandala symmetry guides, which mark the symmetry point of origin).

Move the selected layers

Only the selected layers will be moved (if smaller than canvas). This may be useful if you want to move layers with transparent areas, where you can easily pick the wrong layer through these transparent areas.



Note

You also can move the selected layers by setting its offset in the <u>Edit Layer Attributes</u> dialog.

If Move is on "Selection"

The selection's outline will be moved (see Section 2.1, "Moving or Resizing a Selection").

If Move is on "Path" ✓

Pick a path

That's the default option. The mouse pointer turns to a small hand when it goes over a <u>visible path</u>. Then you can move this path by click-and-dragging it (it will be the active path while moving).

Move the active path

Only the current path will be moved. You can change the current path in the Paths Dialog.

4.3.3. Summary of Move tool actions

Moving a selection

The Move tool allows to move the selection outline only. If the Move Mode is "Layer", you must hold down Ctrl + Alt keys.

If the Move Mode is Selection, you can click-and-drag any point in canvas to move the selection outline. You can also use the arrow keys to move selections precisely. Then, holding down the **Shift** key moves then by increments of 25 pixels.

When you move a selection with the Move tool, the center of the selection is marked with a small cross. This cross and selection boundaries snap to guides or grid if the View \rightarrow Snap to Guides (or Grid) option is checked: this makes aligning selections easier.

See Moving selections for other possibilities.

Moving a layer

The Move Mode must be "Layer". Then you can choose between Move the selected layers and, if you have one or more layers, Point to Layer (or Guide).

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Moving Grouped Layers

If layers are grouped they will all move, regardless of which layer is currently active.

When you pull a guide from a ruler, the Move tool is automatically activated. That's not the case after using another tool, and you have to activate it by yourself. When the mouse pointer goes over a guide, this guide turns to red and you can click-and-drag to move it.

Moving a path

The Path Tool dialog has its own moving function: see Section 5.2, "Paths". But you can also use the Move Tool. The Move Mode must be set to "Path". Note that the path becomes invisible; make it visible in the Paths dialog. You can choose the path to be moved or move the active path.

Moving a text

Every text has its own layer and can be moved as layers. See Section 5.3, "Text".







4.2. Align and Distribute



4.4. Crop

Report a bug in GIMP Report a documentation error

4.4. Crop



4. Transform Tools



4.4. Crop

The Crop Tool is used to crop or clip an image. It works on all the layers of the image, visible and invisible. This tool is often used to remove borders, or to eliminate unwanted areas to provide you with a more focused working area. It is also useful if you need a specific image size that does not match the original dimensions of your image.

To define the crop area click and drag with the mouse. A highlighted area will appear that shows the crop boundaries. To move the whole crop area, click in the middle and drag the rectangle. Resizing can be done by moving close to the borders. The mouse cursor will change and you can drag either one side, if you are in the middle, or two sides, if you are in a corner. While you are changing the drag area, the size of the cropped area and the aspect ratio will be shown in the status bar.

When the mouse becomes the moving cross-hair, you can use the keyboard arrow keys to move the crop rectangle. Holding the **Shift** key down allows to move by increments of 25 pixels.

To finalize cropping, click inside the crop rectangle or press the **Enter** key.



Note

By default the image canvas size isn't changed after cropping. The Tool Options of the Crop Tool have a setting Delete cropped pixels that can be checked to make sure the canvas size is also adjusted to the cropped area.



Tip

You can use <u>Guides</u> to position the crop area. Make sure that the View → Snap to Guides option is checked.

4.4.1. Activating the Tool

There are different possibilities to activate the tool:

- From the main menu: Tools \rightarrow Transform tools \rightarrow Crop.
- By clicking the tool icon \Box in the Toolbox.
- By pressing the | Shift |+ C | keyboard shortcut.

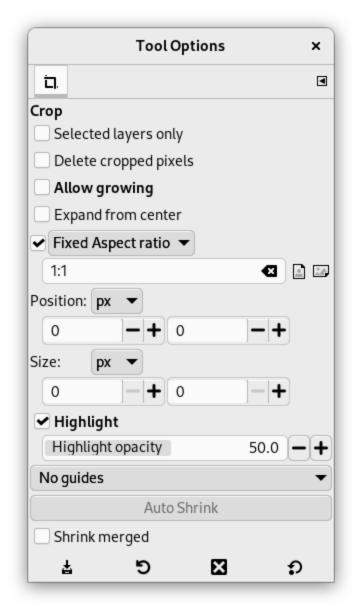
4.4.2. Key modifiers

When you maintain click on the crop rectangle, handles disappear and

- holding down the Ctrl key toggles to the Extend from Center option,
- holding down the Shift key toggles to the Fixed option, which makes some dimensions fixed.

4.4.3. Options

Figure 14.97. Tool Options Dialog



Normally, tool options are displayed in a window attached under the Toolbox as soon as you activate a tool. If they are not, you can access them from the main menu through Windows \rightarrow Dockable Windows \rightarrow Tool Options which opens the option window of the selected tool. The available tool options can also be accessed by double clicking the corresponding tool icon in the Toolbox.

Selected layers only

This option will make crop affect only the selected layers.

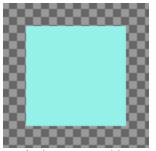
Delete cropped pixels

When checked, the canvas size is adjusted to the cropped area. By default this is not checked, which means that after cropping the layers have been adjusted, but the canvas size is still the same. This is to make sure you don't remove anything by accident.

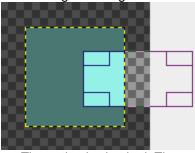
Allow Growing

This option allows the crop or resize to take place outside the image (or layer), and even the canvas. So, you can give the size you want to the resulting image. Transparency will be used if there is no material to crop.

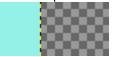
Figure 14.98. Example for "Allow Growing"



An image on a big canvas



The option is checked. The crop rectangle extends outside the canvas.



The resulting image.

Expand from Center

When this option is checked, the crop rectangle expands from the first pixel you clicked taken for center. You can toggle this option with **Ctrl** while drawing the crop rectangle.

Fixed

You can also access this option by holding down the **Ctrl** key while drawing the crop rectangle. This option offers you several to make drawing the crop rectangle respect fixed dimensions, or their ratio:

- Aspect ratio: That's the default possibility. Width and Height keep the same ratio they have in the original image, when drawing the crop rectangle.
- Width / Height: Only Width or Height will remain fixed. The value of this dimension can be set in the text box below; it defaults to 100 pixels.
- Size: Both Width and Height will be fixed. Their values can be set in the text box below, in the form "150×100" for example. The crop rectangle will adopt these values as soon as you click the image. On the right, two buttons let you choose a Landscape (widthwise) or Portrait (upright) format for the crop rectangle.

Position

These two text fields contain the current horizontal and vertical coordinates of the upper left corner of the selection. You can use these fields to adjust the selection position precisely.

Size

These two text fields contain the current width and height of the selection. You can use these fields to adjust the selection size precisely.

Highlight

If you enable this option, the selected area is emphasized by a surrounding mask to make visual selection much easier.

The dark area opacity can be set using the Highlight opacity cursor.

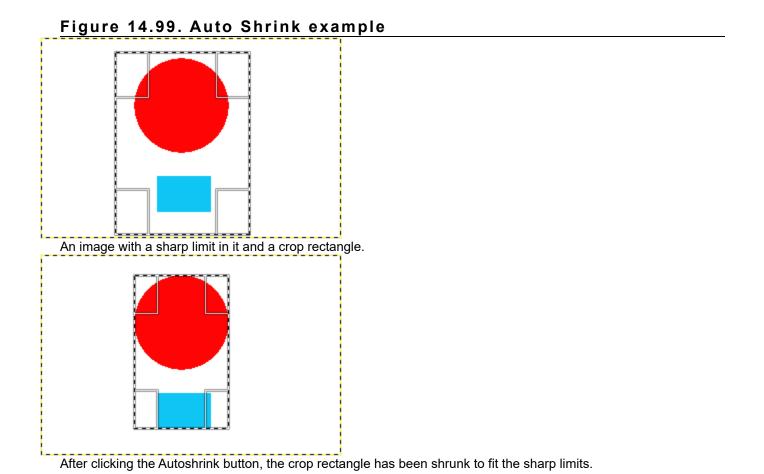
Guides

With this menu you can select the type of guides that is shown within the selection to make the creation of a selection easier, respecting *Photo composition rules*. Six options are available:

- No Guides
- Center lines
- Rule of thirds
- Rule of fifths
- Golden sections
- Diagonal lines

Auto Shrink

The Auto Shrink button will attempt to locate a border, in the active layer, from which to draw dimensions from. This option only works well with isolated objects contrasting sharply with background.



Shrink merged

This option works the same, with Auto Shrink or not. It uses the pixel information from all *visible* layers, rather than just from the active layer.



3/28/25, 12:31 PM 4.5. Rotate

4.5. Rotate



4. Transform Tools



4.5. Rotate

This tool is used to rotate the active layer, a selection or a path. When you click on the image or the selection with this tool a *Rotation adjustment* dialog is opened. There, you can set the rotation axis, marked with a point, and the rotation angle. You can do the same by dragging the mouse pointer on the image or the rotation point.

4.5.1. Activating the Tool

There are different possibilities to activate the tool:

- From the main menu: Tools → Transform Tools → Rotate.
- By clicking the tool icon in the Toolbox.
- By pressing the **Shift** + **R** keyboard shortcut.

4.5.2. Key modifiers

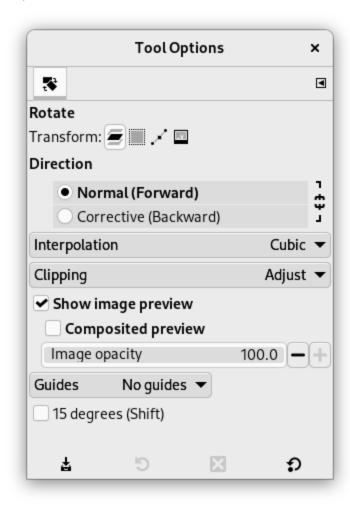


Holding | Ctrl | will constrain the rotation angle to 15 degrees increments.

4.5.3. Options

Figure 14.100. Tool Options Dialog

3/28/25, 12:31 PM 4.5. Rotate



Normally, tool options are displayed in a window attached under the Toolbox as soon as you activate a tool. If they are not, you can access them from the main menu through Windows \rightarrow Dockable Windows \rightarrow Tool Options which opens the option window of the selected tool. The available tool options can also be accessed by double clicking the corresponding tool icon in the Toolbox.

Transform, Direction, Interpolation, Clipping, Show image preview, Guides



Note

These options are described in <u>Transform tools common options</u>.

Transform Direction

The Transform Direction sets which way or direction a layer is rotated. The Normal mode will rotate the layer as one might expect. If a layer is rotated 10 degrees to the right, then the layer will be rendered as such. This behavior is contrary to Corrective rotation.

Corrective Rotation is primarily used to repair digital images that are not straight. If the image is 13 degrees askew then you need not try to rotate by that angle. By using Corrective Rotation you can rotate visually and line up the layer with the image. Because the transformation is reversed, or performed backwards, the image will be rotated with sufficient angle to correct the error.

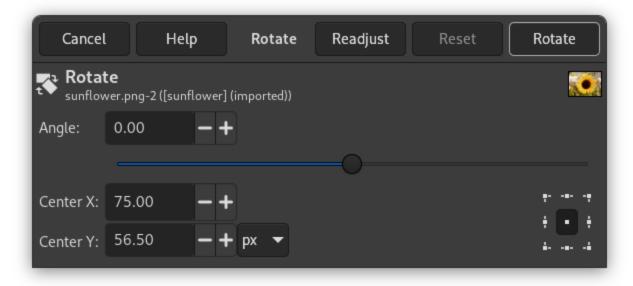
15 Degrees (Shift)

15 Degrees (Shift) will constrain the rotation to angles divisible by 15 degrees.

4.5.4. The Rotation adjustment dialog

Figure 14.101. The Rotation adjustment dialog

3/28/25, 12:31 PM 4.5. Rotate



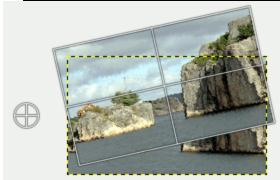
Angle

Here you can set the rotation angle, from -180° to +180°, i.e. 360°.

Center X/Y

This option allows you to set the position of the rotation center, represented by a cross surrounded by a circle in the image. A click-and-drag on this point also allows you to move this center even outside the image. Default unit of measurement is pixel, but you can change it by using the drop-down list.

Figure 14.102. The rotating center



The layer rotated around the rotating center outside the image

Readjust button

With this button you can reset the transform handles back to the original square shape, while keeping the current transformation and zoom level. This enables you to create more complex transformations by making the transformation in several steps.



Note

You can also rotate layers with Layer \rightarrow Transform \rightarrow Arbitrary Rotation.... See Section 7.51, "Arbitrary Rotation".





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4.6. Scale

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4.6. Scale



4. Transform Tools



4.6. Scale

The Scale Tool can be used to scale a layer, selection, path or image, depending on the Transform setting. When you click on your image with the Scale tool, the Scale dialog is opened, allowing to change the Width and Height. When the Chain icon is closed, adjustments to one, will adjust the other value the same percentage. If you do not want this, click the chain icon to disable the synchronization. The default size is in pixels, which can be changed in the measurement drop-down list besides the chain icon.

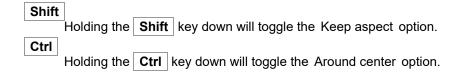
At the same time a Preview (unless disabled in the Tool Options) is superimposed on the object and handles appear on the corners and borders that you can click and drag to change the dimensions. At the center, a square with a cross inside can be used to move the preview.

4.6.1. Activating the Tool

There are different possibilities to activate the tool:

- From the main menu: Tools \rightarrow Transform Tools \rightarrow Scale.
- By clicking the tool icon in the Toolbox.
- By pressing the | Shift |+ | S | keyboard shortcut.

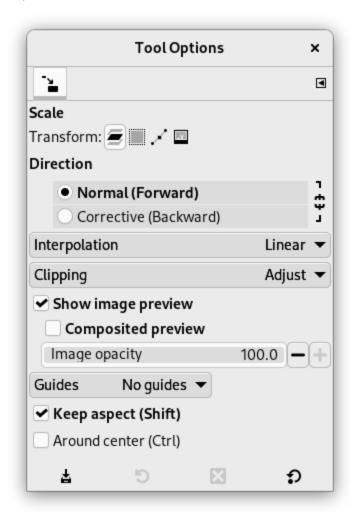
4.6.2. Key modifiers



4.6.3. Options

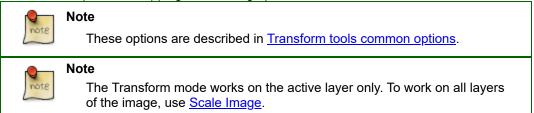
Figure 14.103. Tool Options Dialog

3/28/25, 12:31 PM 4.6. Scale



Normally, tool options are displayed in a window attached under the Toolbox as soon as you activate a tool. If they are not, you can access them from the main menu through Windows \rightarrow Dockable Windows \rightarrow Tool Options which opens the option window of the selected tool. The available tool options can also be accessed by double clicking the corresponding tool icon in the Toolbox.

Transform, Direction, Interpolation, Clipping, Show image preview, Guides



To scale a path, please refer to <u>Transforming path</u>.

Keep aspect (Shift)

When you move a corner of the selection frame, this option will constrain the scale such as the Height/Width ratio of the layer will remain constant. Note that this doesn't work with border handles. Note also that it toggles the linking chain in the dialog.

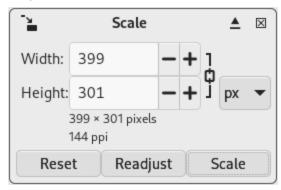
Around center (Ctrl)

When this option is enabled, you can scale from center, radially if "Keep aspect" is checked, else vertically or horizontally.

4.6.4. The Scale adjustment dialog

Figure 14.104. The Scale adjustment dialog

3/28/25, 12:31 PM 4.6. Scale



Width, Height

Here, you can set Width and Height you want to give to the object. The default unit of measurement is pixel. You can change it by using the drop-down list. These values are also automatically changed when you drag handles in the image. If the associated \Box linking chain is broken, you can change Width and Height separately.

Readjust button

With this button you can reset the transform handles back to the original square shape, while keeping the current transformation and zoom level. This enables you to create more complex transformations by making the transformation in several steps.



Report a bug in GIMP Report a documentation error

3/28/25, 12:32 PM 4.7. Shear

4.7. Shear



4. Transform Tools



4.7. Shear

Shear tool is used to shift one part of an image, a layer, a selection or a path to a direction and the other part to the opposite direction. For instance, a horizontal shearing will shift the upper part to the right and the lower part to the left. A rectangle becomes a diamond. This is not a rotation: the image is distorted. To use this tool after selecting, click on the image or the selection: a grid is possibly superimposed and the Shearing Information dialog is opened. By dragging the mouse pointer on the image you distort the image, horizontally or vertically according to the direction given to the pointer. When you are satisfied, click on the Shear button in the info dialog to validate.

Figure 14.105. Shear example





Note

You can't shear both ways at the same time, you have to use the shear tool twice on end.

4.7.1. Activating the Tool

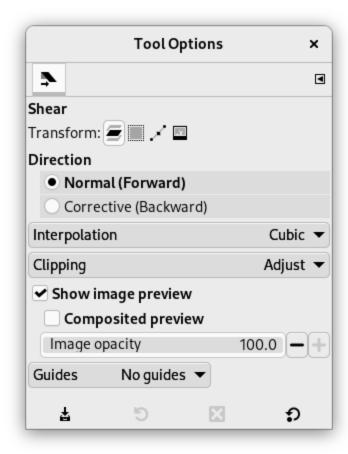
There are different possibilities to activate the tool:

- From the main menu: Tools → Transform Tools → Shear.
- By clicking the tool icon → in the Toolbox.
- By pressing the | Shift |+ | H | keyboard shortcut.

4.7.2. Options

Figure 14.106. Tool Options Dialog

3/28/25, 12:32 PM 4.7. Shear



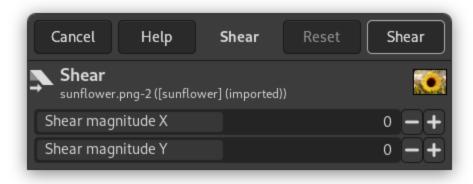
Normally, tool options are displayed in a window attached under the Toolbox as soon as you activate a tool. If they are not, you can access them from the main menu through Windows \rightarrow Dockable Windows \rightarrow Tool Options which opens the option window of the selected tool. The available tool options can also be accessed by double clicking the corresponding tool icon in the Toolbox.

Transform, Direction, Interpolation, Clipping, Show image preview, Guides



4.7.3. The Shear adjustment dialog

Figure 14.107. The Shear adjustment dialog



Shear magnitude X

3/28/25, 12:32 PM 4.7. Shear

Here, you can set the horizontal shearing amplitude. A positive value produces a clock-wise tilt. A negative value gives a counter-clock-wise tilt. The unit used by shearing are half-pixels.

Shear magnitude Y

As above, in the vertical direction.



3/28/25, 12:32 PM 4.8. Perspective

4.8. Perspective



4. Transform Tools



4.8. Perspective

The Perspective Tool is used to change the "perspective" of the active layer content, of a selection content or of a path. When you click on the image, according to the Preview type you have selected, a rectangular frame or a grid pops up around the selection (or around the whole layer if there is no selection), with a handle on each of the four corners. By moving these handles by click-and-drag, you can modify the perspective. At the same time, a "Transformation information" pops up, which lets you valid the transformation. At the center of the element, a circle lets you move the element by click-and-drag.



Note

This tool is not actually a perspective tool, as it doesn't impose perspective rules. It is better described as a distort tool.

4.8.1. Activating the Tool

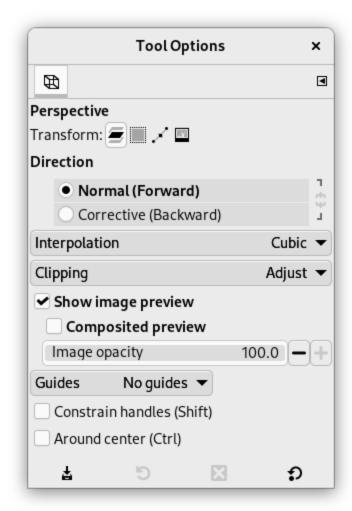
There are different possibilities to activate the tool:

- From the main menu: Tools → Transform Tools → Perspective.
- By pressing the **Shift** + **P** keyboard shortcut.

4.8.2. Options

Figure 14.108. Tool Options Dialog

3/28/25, 12:32 PM 4.8. Perspective



Normally, tool options are displayed in a window attached under the Toolbox as soon as you activate a tool. If they are not, you can access them from the main menu through Windows \rightarrow Dockable Windows \rightarrow Tool Options which opens the option window of the selected tool. The available tool options can also be accessed by double clicking the corresponding tool icon in the Toolbox.

Transform, Direction, Interpolation, Clipping, Show image preview, Guides



Constrain handles (Shift)

Constrain handles to move along edges and diagonal.

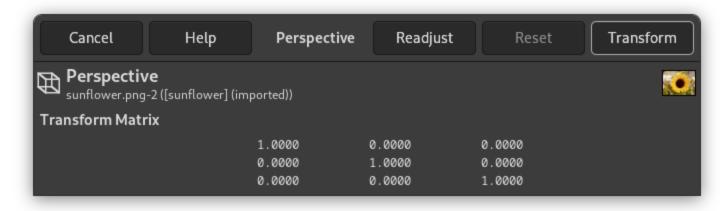
Around center (Ctrl)

Transform around the center point.

4.8.3. The Perspective adjustment dialog

Figure 14.109. The Perspective adjustment dialog

3/28/25, 12:32 PM 4.8. Perspective



When you click on the image window, the adjustment dialog appears.

Transform Matrix

The information window shows a mathematical representation of the perspective transformation. You can find more information about transformation matrices on <u>Wikipedia</u>.

Readjust button

With this button you can reset the transform handles back to the original square shape, while keeping the current transformation and zoom level. This enables you to create more complex transformations by making the transformation in several steps.



3/28/25, 12:32 PM 4.9. 3D Transform

4.9. 3D Transform



4. Transform Tools



4.9. 3D Transform

The 3D Transform tool allows you to change the perspective of a layer and to move it in 3D space. You can set a vanishing point, then rotate the layer in X, Y, and Z axes.

It offers the usual option dialog under Toolbox and an on-canvas settings dialog.

4.9.1. Activating the Tool

There are different possibilities to activate the tool:

- From the main menu: Tools \rightarrow Transform Tools \rightarrow 3D Transform.
- By clicking the tool icon

 in the Toolbox.
- By pressing the Shift + W keyboard shortcut.

4.9.2. Options

Figure 14.110. Tool Options Dialog

3/28/25, 12:32 PM 4.9. 3D Transform



Normally, tool options are displayed in a window attached under the Toolbox as soon as you activate a tool. If they are not, you can access them from the main menu through Windows \rightarrow Dockable Windows \rightarrow Tool Options which opens the option window of the selected tool. The available tool options can also be accessed by double clicking the corresponding tool icon in the Toolbox.

Transform, Direction, Interpolation, Clipping, Show image preview, Guides



Note

These options are described in Transform tools common options.

Unified interaction

This option allows shifting the vanishing, as well as panning and rotating without switching between tabs on the oncanvas settings dialog.

Constrain axis (Shift)

When you press | **Shift** |, the present transformation axis becomes fixed in preview.

Z axis (Ctrl)

When you press | Ctrl |, transformation is done around the Z axis.

Local frame (Alt)

This option allows controlling the transformation in the layer local frame of reference (the current layer), instead of the global one (all layers).







3/28/25, 12:32 PM 4.9. 3D Transform

4.8. Perspective

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Report a bug in GIMP Report a documentation error

4.10. Unified Transform

4.10. Unified Transform



4. Transform Tools



4.10. Unified Transform

Figure 14.111. Unified Transform tool



This tool combines several tools: <u>Rotate</u>, <u>Scale</u>, <u>Shear</u> and <u>Perspective</u>, performing one or several of these actions at once in one single operation. Combining two or more options gives you almost infinite possibilities of transformation. As the other transformation tools, this tool works on the active layer (default).

After selecting the Unified Transform tool in the toolbox, click on the image window. Several elements appear on the image window:

Several kinds of handles, on the edges:



Diamonds for shearing



Squares for scaling.



Small diamonds for changing perspective, in large squares for Scaling.

Click and drag a handle to perform the action of the concerned tool

- A circle with a cross inside at the center of the image window for the pivot. Click and drag this circle to move the
 pivot. It can be placed out of the image window, and even where you want on screen (but you can no longer see it,
 unless you enlarge the image window).
- The mouse pointer comes with small icons which vary according to position:
 - On the layer: Move icon,
 - Outside the layer: Rotate icon,
 - o On handles: Shear or perspective or Scale icon,
 - o On rotation center circle: Move icon and Rotation icon.
- The status bar, at the bottom of the image window, displays the name of the current tool.

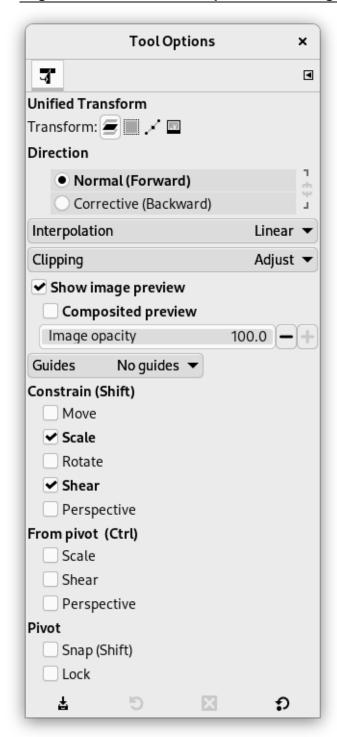
4.10.1. Activating the Tool

There are different possibilities to activate the tool:

- From the main menu: Tools \rightarrow Transform Tools \rightarrow Unified transform.
- By clicking the tool icon in the Toolbox.
- By pressing the Shift + T keyboard shortcut.

4.10.2. Options

Figure 14.112. Tool Options Dialog



Normally, tool options are displayed in a window attached under the Toolbox as soon as you activate a tool. If they are not, you can access them from the main menu through Windows \rightarrow Dockable Windows \rightarrow Tool Options which opens the option window of the selected tool. The available tool options can also be accessed by double clicking the corresponding tool icon in the Toolbox.

Transform, Direction, Interpolation, Clipping, Show image preview, Guides

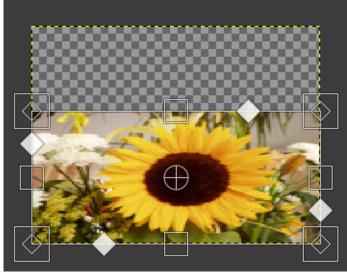


Constrain

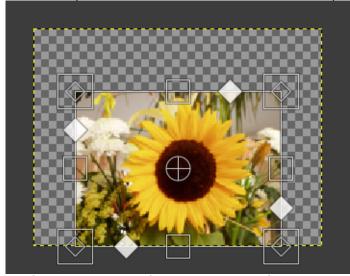
Move: when this option is unchecked, moving the layer is smooth. Checking the option constrains movement to 45° from center

Scale: when this option is checked, the aspect ratio is preserved.

Figure 14.113. Scale Constraint Option



"Scale" option under "Constrain" not checked; "Scale" option under "From pivot" not checked



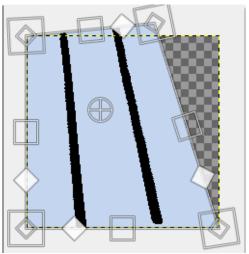
"Scale" option under "Constrain" checked; "Scale" option under "From pivot" not checked

Rotate: default rotation is smooth. When this option is checked, rotation goes by 15° steps.

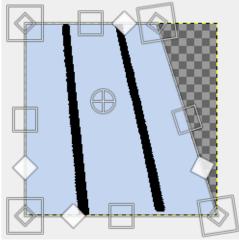
Shear: normally, to shear the layer, you drag the corresponding icon along a layer edge. If this option is unchecked (default), you may move away from this edge. If this option is checked, shear handles remain on this edge.

Perspective: normally, to change perspective, you drag the corresponding icon along a layer edge. If this option is unchecked (default), you may move away from this edge. If this option is checked, perspective handles remain on this edge or on a diagonal.

Figure 14.114. Perspective Constraint Option



"Perspective" option under "Constrain" not checked; "Perspective" option under "From pivot" not checked

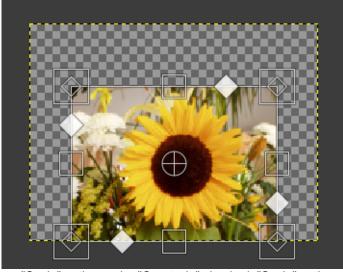


"Perspective" option under "Constrain" checked; "Perspective" option under "From pivot" not checked

From pivot

Scale:

Figure 14.115. Scale from pivot



"Scale" option under "Constrain" checked; "Scale" option under "From pivot" not checked

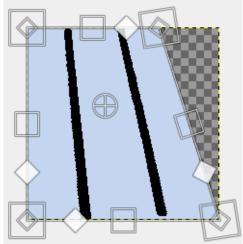


"Scale" option under "Constrain" checked; "Scale" option under "From pivot" also checked

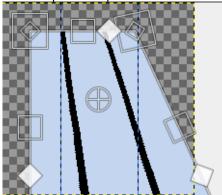
Shear: When this option is unchecked (default), the opposite edge is fixed and the pivot moves with shearing. When the option is checked, shearing is performed around a fixed pivot and the opposite side is sheared by the same amount, but in the opposite direction.

Perspective: when this option is checked, the position of pivot is maintained.

Figure 14.116. Perspective from pivot



"Perspective" option under "Constrain" checked; "Perspective" option under "From pivot" not checked



"Perspective" option under "Constrain" checked; "Perspective" option under "From pivot" also checked

Pivot

Snap: if this option is checked, the pivot snaps to center or to corners when it comes close to them.

Lock: locks pivot.

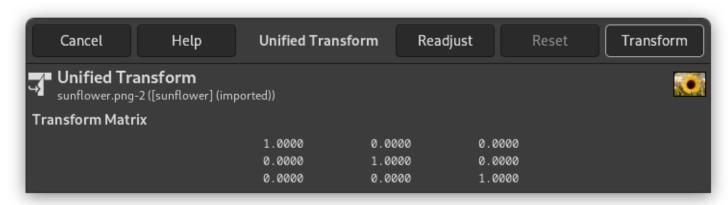
4.10.3. Key modifiers

Key modifiers are active when an action (move, scale, rotate, etc.) is selected. Hold on:

- **Shift** to check all Constrain unchecked options and uncheck already checked ones if a transformation handle is selected, or, if the pivot is selected, to snap pivot to center or corner,
- Ctrl to check all "From pivot" unchecked options and uncheck already checked ones.

4.10.4. The Unified Transform adjustment dialog

Figure 14.117. The Unified Transform adjustment dialog



When you click on the image window, the adjustment dialog appears.

Transform Matrix

The information window shows a mathematical representation of the perspective transformation. You can find more information about transformation matrices on <u>Wikipedia</u>.

Readjust button

With this button you can reset the transform handles back to the original square shape, while keeping the current transformation and zoom level. This enables you to create more complex transformations by making the transformation in several steps.



3/28/25, 12:33 PM 4.11. Handle Transform

4.11. Handle Transform



4. Transform Tools



4.11. Handle Transform

This tool allows you to apply moving, rotating, shearing, perspective and scaling corrections using handles placed on canvas.



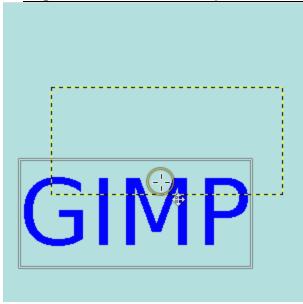
Original image: a text layer

You can use 1 to 4 handles, and the effect depends on the number of handles. The tool acts on a selection, or, if there is no selection, on the whole layer. The active handle is bigger than the others. When the mouse pointer is on a handle, it goes with a small icon that represents the active action.

When you click and drag a handle, a transformation is applied, and the other handles stay at their place:

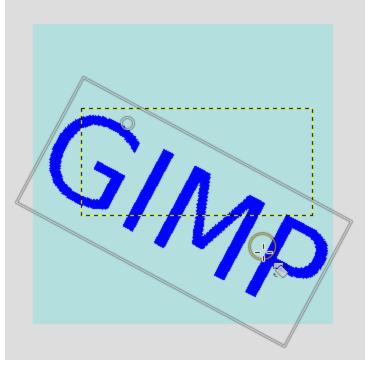
• With 1 handle: click and drag the handle to move all pixels of the selection.





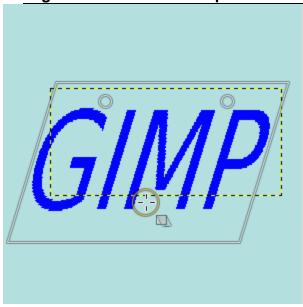
• **With 2 handles**: when you click and drag a handle, you *rotate* around the other handle as a center, and you *scale* the selection, keeping the aspect ratio.

Figure 14.119. Example for 2 handles (Rotate and scale)



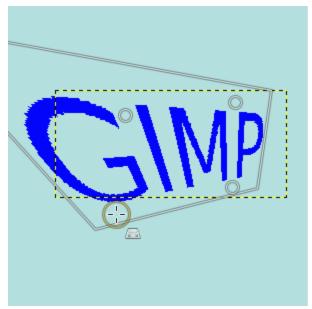
• With 3 handles: when you click and drag a handle, you shear and scale the selection, aspect ratio is not kept.

Figure 14.120. Example for 3 handles (Shear and scale)



• With 4 handles: when you click and drag a handle, you *change perspective* and *scale* the selection, aspect ratio is not kept.

Figure 14.121. Example for 4 handles (Change perspective and scale)



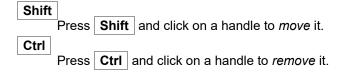
4.11.1. Activating the Tool

There are different possibilities to activate the tool:

- From the main menu: Tools \rightarrow Transform Tools \rightarrow Handle Transform.
- By clicking the tool icon in the Toolbox.

 By pressing the Shift + L keyboard shortcut.

4.11.2. Key modifiers



4.11.3. Options

Figure 14.122. Tool Options Dialog

3/28/25, 12:33 PM 4.11. Handle Transform



Normally, tool options are displayed in a window attached under the Toolbox as soon as you activate a tool. If they are not, you can access them from the main menu through Windows \rightarrow Dockable Windows \rightarrow Tool Options which opens the option window of the selected tool. The available tool options can also be accessed by double clicking the corresponding tool icon in the Toolbox.

Transform, Direction, Interpolation, Clipping, Show image preview, Guides



Note

These options are described in <u>Transform tools common options</u>.

Image opacity

To set the opacity of the preview

Handle mode

These options are describes in key modifiers section.



4.10. Unified Transform





4

3/28/25, 12:33 PM 4.12. Flip

4.12. Flip



4. Transform Tools



4.12. Flip

The Flip tool provides the ability to flip layers or selections either horizontally or vertically. When a selection is flipped, a new layer with a Floating Selection is created. You can use this tool to create reflections.

4.12.1. Activating the Tool

There are different possibilities to activate the tool:

- From the main menu: Tools \rightarrow Transform Tools \rightarrow Flip.
- By clicking the tool icon in the Toolbox.
- By pressing the | Shift |+ | F | keyboard shortcut.

4.12.2. Key modifiers

Ctrl

Ctrl lets you change the modes between horizontal and vertical flipping.

4.12.3. Options

Figure 14.123. Tool Options Dialog



Normally, tool options are displayed in a window attached under the Toolbox as soon as you activate a tool. If they are not, you can access them from the main menu through Windows \rightarrow Tool Options which opens

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the option window of the selected tool. The available tool options can also be accessed by double clicking the corresponding tool icon in the Toolbox.

Transform, Clipping



Note

These options are described in <u>Transform tools common options</u>.

Direction (Ctrl)

The Tool Toggle settings control flipping in either a Horizontal or Vertical direction. This toggle can also be switched using Ctrl .







4.11. Handle Transform



4.13. Cage Transform

4.13. Cage Transform



4. Transform Tools



4.13. Cage Transform

The Cage tool is a special transforming tool allowing you to select the transforming area by setting anchor points by free hand drawing similar to the way you do it with the Free Select tool. The tool adds nothing to the image until you confirm the transformation by pressing the **Enter** key.

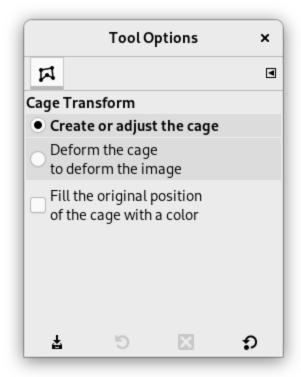
4.13.1. Activating the Tool

There are different possibilities to activate the tool:

- From the main menu: Tools → Transform Tools → Cage Transform.
- By clicking the tool icon in the Toolbox.
- By pressing the | Shift |+ | G | keyboard shortcut.

4.13.2. Options

Figure 14.124. Tool Options Dialog



Normally, tool options are displayed in a window attached under the Toolbox as soon as you activate a tool. If they are not, you can access them from the main menu through Windows \rightarrow Tool Options which opens the option window of the selected tool.

Create or adjust the cage

When activating the Cage Tool this option is selected. You can now click in the image to make anchor points around the desired area. If you need to add anchor points at a later stage, you click on this option.

Deform the cage to deform the image

GIMP switch to this option automatically when the cage outline is finished. Now you are able to drag the anchor points around in the image and even outside it to transform the picture. The transforming starts when you release the mouse button.

You can activate more than one anchor point by holding down the **Shift** key while clicking on the points. You can also select more points by holding down the mouse button while drawing a rectangle around the desired points.

Fill the original position of the cage with a color

If the transforming action results in empty areas these areas will be filled with color if this option is checked. It looks like the color is picked from the start pixel of the cage line.

4.13.3. Using the "Cage Transform" tool

Figure 14.125. Cage Transform Tool example



The cage area selected



Transformed

When clicking on the cage icon in the toolbox the cage option is set to "Create or adjust the cage". You are now able to draw a cage outline in the image by successively clicking around the area you want to transform. Click on the starting point to finish the selection. GIMP will then do some mathematics and activate the "Deform the cage to deform the image" to allow you to drag the points on the line to deform the cage and the image.

The selected point(s) turns to a square. Drag the points around in the image to transform it. The transforming will occur every time you release the press on the mouse button. The transforming may take some time so be patient especially when working with large images.

If you desire to add more points to the line you have to select the "Create or adjust the cage" in the tool options dialog. Put the points on the line and switch back to the "Deform the cage to deform the image" to transform the image or layer.

When the work is done, press the **Enter** key to confirm it.







4.12. Flip

4.14. Warp Transform

4.14. Warp Transform



4. Transform Tools



4.14. Warp Transform

Warp Transform is a GEGL based brush-like tool which works directly on the image. You can use an erase mode to partially remove warping you applied. You have available options to adapt strength and size of warping.

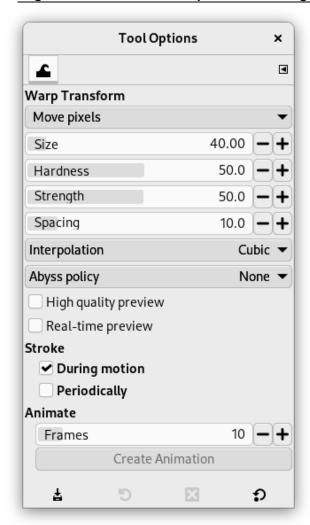
4.14.1. Activating the Tool

There are different possibilities to activate the tool:

- From the main menu: Tools \rightarrow Transform \rightarrow Warp Transform.
- By clicking the tool icon **▲** in the Toolbox.
- By pressing the W keyboard shortcut.

4.14.2. Options

Figure 14.126. Tool Options Dialog



Normally, tool options are displayed in a window attached under the Toolbox as soon as you activate a tool. If they are not, you can access them from the main menu through Windows \rightarrow Dockable Windows \rightarrow Tool Options which opens the option window of the selected tool. The available tool options can also be accessed by double clicking the corresponding tool icon in the Toolbox.

Move pixels

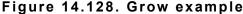
"Move pixels" is the first item of a drop-down list which contains various warping methods:

Move pixels is the default method.

Figure 14.127. Move pixels example



Grow area





Shrink area

Figure 14.129. Shrink example



Clicking 5 times at the center of the image with brush size = image size.

Swirl clockwise/counter-clockwise

Figure 14.130. Swirl example



Swirling clockwise the whole image (brush size = image size) with a circular movement of the brush.

- Erase warping allows you to undo previously made warp strokes.
- Smooth warping allows you to smooth previously made warp strokes.

Size

The size of the brush.

Hardness, Strength

These control how much of the pixels of the starting location of the warp are moved to the displacement location.

Spacing

This controls the amount of movement when stroking.

Interpolation



Note

An interpolation method is used during warping. See <u>Interpolation</u> for a description of these methods.

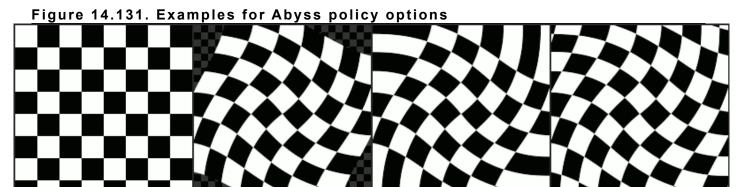
Abyss policy

"Abyss" is a term used by GIMP developers for "data outside the input buffer". The warp tool moves pixels from one point to another. Some pixels may come from outside the layer boundary. These pixels don't actually exist anywhere, and therefore don't have any

associated color; yet, some color must be assigned to them.

"Abyss policy" has a drop-down list that allows you to fill empty areas in different manners:

- None: this is the default option. Empty areas are transparent. An alpha layer is necessary for this option.
- Clamp: each edge of the transformed layer stretches out indefinitely, so, for example, a pixel to the left of the layer boundary has the same color as the leftmost pixel of the layer with the same y coordinate. An alternative way to think of it is that each pixel outside the layer boundary has the same color as the closest pixel inside the layer boundary.
- Loop: the transformed layer repeats itself in all directions, so that, for example, falling off the right edge of the layer takes you back to the left edge.



Clamp

High quality preview

Original

"preview" is the image window, where you work, before pressing **Enter** to validate the transformation. With this option checked, preview is more accurate, but slower.

Real-time preview

When enabled, updates the preview immediately in real-time while warping, which can be slow. When disabled, there can be a slight delay in updating the preview.

Stroke

- During motion: applies the warp stroke while the brush is moving.
- Periodically: applies the warp stroke periodically. When this is enabled, a Rate slider appears where you can adjust how
 often it is applied.

Animate

This option allows you to create an animation by generating several intermediate images between the original image and the final transformation.

Frames: this determines the number of frames in the animation.

Create Animation button: press this to create the animation in a new image window. You can export this to image formats that support animation, e.g. as a GIF image and then enabling the As animation option in the export dialog; or by exporting as webp image and enabling the Save animation option.

Note that you can only create an animation when the warp transform has not yet been finalized.

None



4.13. Cage Transform



7

Other Tools

Loop

3/28/25, 12:34 PM 5. Other Tools

5. Other Tools



Chapter 14. Tools



5. Other Tools

To access these tools, select Tools from the main menu.

5.1. Overview

"Other" tools are those tools which don't belong to any main group of tools. This category includes the following tools:

- Section 5.2, "Paths"
- Section 5.3, "Text"
- Section 5.4, "Color Picker"
- Section 5.5, "Measure"
- Section 5.6, "Zoom"







4.14. Warp Transform



5.2. Paths

5.2. Paths



5. Other Tools



5.2. Paths

The Paths tool allows to create complex selections called Bézier Curves, a bit like the Free Selection tool but with all the adaptability of vectorial curves. You can edit your curve, you can paint with your curve, or even save, import, and export the curve. You can also use paths to create geometrical figures. Paths have their own dialog box: <u>Dialog</u>. See the <u>Path</u> concept.

5.2.1. Activating the Tool

There are different possibilities to activate the tool:

- From the main menu: Tools → Paths.
- By clicking the tool icon in the Toolbox.
- By pressing the **B** keyboard shortcut.

5.2.2. Key modifiers



Note

Help messages pop up at the bottom of the image window to help you about all these keys.

Shift

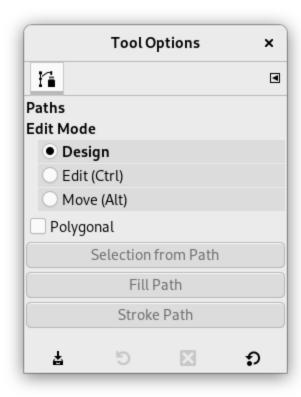
This key has several functions depending on context. See Options for more details.



Three modes are available to work with the Paths tool: Design, Edit and Move. Ctrl key toggles between Design and Edit. Alt (or Ctrl + Alt) key toggles between Design and Move.

5.2.3. Options

Figure 14.132. Tool Options Dialog



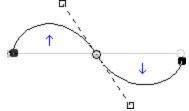
Normally, tool options are displayed in a window attached under the Toolbox as soon as you activate a tool. If they are not, you can access them from the main menu through Windows \rightarrow Tool Options which opens the option window of the selected tool.

Edit Mode

Design

By default, this tool is in Design mode. You draw the path by clicking successively. You can move control points by clicking on them and dragging them. Between control points are segments.

Numbers are steps to draw a two segments straight path.



Curved segments are easily built by dragging a segment or a new node. Blue arrows indicate curve. Two little handles appear that you can drag to bend the curve.



Tip

To quickly close the curve, press **Ctrl** key and click on the initial control point. In previous versions, clicking inside a closed path converted it into Selection. Now, you can use the Selection from Path button or the Path to Selection button in the Paths dialog.



Tip

When you have two handles, they work symmetrically by default.

Release the pressure on the mouse button to move handles individually.

The Shift key will force the handles to be symmetrical again.

Several functions are available in Design mode:

Inserting a new node: When you press Ctrl and hover the mouse pointer over the existing path, the mouse pointer changes to the '+' sign. Clicking will create a new path node in the hovered point of the path.

Moving one or several nodes: On a node, the mouse pointer becomes a 4-arrows cross. You can click and drag it. You can select several nodes by Shift and click and move them by click and drag. Pressing Ctrl + Alt allows to move all the path, as a selection.

Modifying handles: You have to Edit a node first. A handle appears. Drag it to bend the curve. Pressing Shift toggles to symmetric handles.

Modify segment: When the mouse pointer moves over a segment, it turns to a 4-arrows cross. Click and drag it to bend the segment. As soon as you move it, handles appear at both ends of the segment. Pressing the Shift key toggles to symmetric handles.

Adding a new subpath: When you press Shift and hover the mouse pointer outside the existing path, the mouse pointer starts displaying a square. Clicking will start a subpath that isn't connected to other curves, but is considered a part of the path.

Edit (Ctrl)

Edit performs functions which are not available in Design mode. With this mode, you can work only on the existing path. When the mouse pointer is not on the path, the pointer changes to a small crossed circle and you can not do any path editing.

Add a segment between two nodes: Click on a node at one end of the path to activate it. The pointer is like a union symbol. Click on an other node to link both nodes. This is useful when you have to link unclosed components.

Remove a segment from a path: While pressing Shift + Ctrl key combination, point to a segment. The mouse pointer turns to a "-" sign. Click to delete the segment.

Add a node to a path: point to a segment. Pointer turns to "+"". Click where you want to place the new control point.

Remove a node: While pressing Shift + Ctrl key combination, point to a node. Pointer turns to "-"". Click to delete the node.

Add a handle to a node: Point to a node. Pointer turns to small hand. Drag the node: handle appears. Pressing Shift toggles to symmetric handles.

Remove a handle from a node: While pressing Shift + Ctrl key combination, point to a handle. The pointer doesn't turn to the expected "-"" and remains a hand. Click to delete the handle.



Caution

There is no warning before removing a node, segment or a handle.

Move (Alt)

Move mode allows to move one or all components of a path. Simply click on the path and drag it. If you have several components, only the selected one is moved. If you click and drag outside the path, all components are moved. Pressing the **Shift** key toggles between moving all components and selected components only.

Polygonal

With this option, segments are linear only. Handles are not available and segments are not bent when moving them.

Selection from Path

This button allows creation of a selection that is based on the path in its present state. This selection is marked with the <u>"marching ants"</u>. Note that the path is still present: the current tool is still the path tool and you can modify this path without modifying the selection that has become independent. If you change tools, the path becomes invisible, but it persists in the <u>Paths Dialog</u> and you can re-activate it.

If the path is not closed, GIMP will close it with a straight line.

As the help pop-up tells, pressing Shift when clicking on the button will add the new selection to an already existing one. Pressing Ctrl will subtract the selection from the pre-existing selection, and the Shift + Ctrl key combination will intersect the two selections.

Fill path

This lets you fill an enclosed path with a solid color or pattern.

Stroke path

See Section 3.19, "Stroke Paths" and Section 4, "Paths".

5.2.4. Context Menu

When right-clicking on path elements, like anchors or segments, a context menu will appear, the contents of which depends on the item you clicked on. The following commands may be shown in the context menu.

Delete Anchor

This command deletes the selected anchor and connects the segments before and after it.

Shift Start

This command shifts the start anchor to the selected anchor. The start anchor is where stroking starts. The start anchor has a pointy side indicating the stroking direction. This can be useful when you want to wrap Text along

Path

Shifting the start anchor on open strokes may insert a new segment connecting the previous endpoints, and removes the segment leading into the new start anchor.

Insert Anchor

This command adds a new anchor on the selected spot on the segment.

Delete Segment

This command deletes the selected segment. This will create an opening in your path.

Reverse Stroke

This reverses the direction of the stroke. The shape of the start anchor will reflect the direction of the stroke. The pointy side is the direction it will go to when stroking.







5. Other Tools



5.3. Text

5.3. Text



5. Other Tools



5.3. Text

The Text tool adds text to your image in a new layer. Text can be edited directly on canvas. A text tool editor, which shows up on top of the canvas above the text box, allows you to quickly change some of the text characteristics (for selected text or newly typed text only).

As soon as you type your text, the text box appears on the canvas in a rectangular frame. If you draw the rectangular frame first, the text is automatically adapted to the frame size. You can enlarge this frame as you do with <u>rectangular</u> selections.



Right clicking on the text opens a context menu that allows you to copy, cut, paste, open a text file, change text orientation, and other text related commands.

You can also use a separate Text Editor window by checking the Use editor window option in the Tool Options dialog. You can also use the *Text Options dialog* to change the font, color and size of your text, and justify it, interactively. In this chapter, tool options will be described. To know how to use the Text tool, please refer to text management.

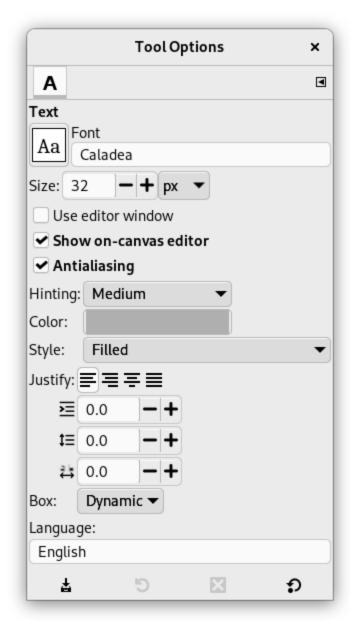
5.3.1. Activating the Tool

There are different possibilities to activate the tool:

- From the main menu: Tools → Text.
- By clicking the tool icon A in the Toolbox.
- By pressing the | T | keyboard shortcut.

5.3.2. Options

Figure 14.133. Tool Options Dialog



Normally, tool options are displayed in a window attached under the Toolbox as soon as you activate a tool. If they are not, you can access them from the main menu through Windows \rightarrow Tool Options which opens the option window of the selected tool.

Font

Click on the fonts button $A\alpha$ to open the font selector of this tool, which offers you a list of installed X fonts. At the bottom of the font selector you find some icons which act as buttons for:

- resizing the font previews,
- selecting list view or grid view,
- opening the <u>font dialog</u>.

Choose a font from the installed fonts. When you select a font it is interactively applied to your text.



Tip

You can use the scroll wheel of your pointing device (usually your mouse) on the fonts button in order to quickly change the font of your text (move the pointer on the fonts button, and don't click, just use the wheel button).

Size

This control sets the size of the font in any of several selectable units.

Use editor window

Use an external editor window for text editing instead of direct-on-canvas editing.

Show on-canvas editor

Show a text tool editor on top of the canvas above the text box, which allows you to quickly change some of the text characteristics (for selected text or newly typed text only).

Antialiasing

Antialiasing will render the text with much smoother edges and curves. This is achieved by slight blurring and merging of the edges. This option can radically improve the visual appearance of the rendered typeface. Caution should be exercised when using antialiasing on images that are not in RGB color space.

Hinting

Uses the index of adjustment of the font to modify characters in order to produce clear letters in small font sizes.

Color

Color of the text that will be drawn next. Defaults to black. Selectable from the color picker dialog box that opens when the current color sample is clicked.



Tip

You can also click-and-drag the color from the Toolbox color area onto the text.

Justify

Causes the text to be justified according to any of four rules selectable from the associated icons.

Indent

Controls the indent spacing from the left margin, for the first line.

Adjust line spacing

Controls the spacing between successive lines of text. This setting is interactive: it appears at the same time in image text. The number is not the space between lines itself, but how many pixels must be added to or subtracted from this space (the value can be negative).

Adjust letter spacing

Controls the spacing between letters. Also in this case the number is not the space itself between letters, but how many pixels must be added to or subtracted from this space (the value can be negative).

Box

Concerns the text box. The associated drop-down list offers two options:

Dynamic: default option. The size of the text box increases as you type. Text may go out of the image. You have to press the **Enter** key to add a new line. The indent option indents all lines. If you increase the box size, the option turns to "Fixed".

Fixed: you must enlarge the text box first. Else, usual shortcuts are active! The text is limited by the right side of the box and continues on next line. This is not true new line: you must press the **Enter** key to add a real new line. The text may go out the lower border of the image. The indent option works on the first line only.

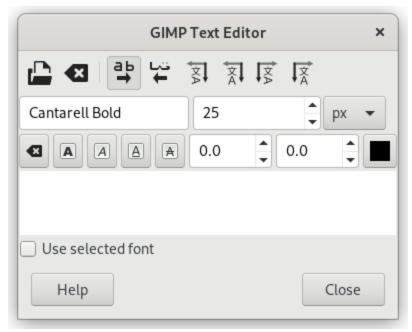
Language

The text language may have an effect on the way the text is rendered. If you enter a letter in this field, you get a list of all available languages whose names begin with this letter. Select the language in which you are entering your text.

Right clicking on this field opens the context menu which allows you to paste language names from the clipboard.

5.3.3. Text Editor

Figure 14.134. The Text Editor



This text editor is only available if the Use editor window option is checked in Tool Options.

As soon as you start writing, a Text layer is created in the Layer Dialog. On an image with such a layer (the image you are working on, or a .xcf image), you can resume text editing by activating this text layer then clicking on it (double click). Of course, you can apply to this text layer the same functions you use with other layers.

To add another text to your image click on a non-text layer: a new Text Editor will appear and a new text layer will be created. To pass from a text to another one activate the corresponding text layer and click on it to activate the editor.

The Text Editor options

All these options are also in the text context menu.

Vertical text (top-to-bottom writing) is supported and particularly useful for East-Asian writing systems, but also for anyone wishing to design fancy vertical text.

Load text from file

Text can be loaded from a text file by clicking the folder icon in the text editor. All the text in the file is loaded.

Clear all text

Clear all the text.

From left to right

This option causes text to be entered from left to right, as is the case with most Western languages and may Eastern languages.

From right to lef

This option allows text to be entered from right to left, as is the case with some Eastern languages, such as Arabic (illustrated in the icon).

Vertical, right to left (mixed orientation)

Text is written top-to-bottom in columns, from right to left, and is rotated 90° clockwise.



Vertical, right to left (upright orientation)

Text is written top-to-bottom in columns, from right to left, upright.



Vertical, left to right (mixed orientation)

Text is written top-to-bottom in columns, from left to right, and is rotated 90° clockwise.



Vertical, left to right (upright orientation)

Text is written top-to-bottom in columns, from left to right, upright.



Use selected font

Default doesn't use the font you have selected in the Options dialog. If you want to use it, check this option.



Note

See also Section 2, "Text"



5.2. Paths







5.4. Color Picker

3/28/25, 12:35 PM 5.4. Color Picker

5.4. Color Picker



5. Other Tools



5.4. Color Picker

The Color Picker Tool is used to select a color on any image opened on your screen. By clicking a point on an image, you can change the active color to that which is located under the pointer. By default, the tool works on the active layer, but the Sample merged option lets you grab the color as a composite from all visible layers. *Only colors in visible layers are used*. A Color Picker Information window opens when you click on the image.

5.4.1. Activating the Tool

There are different possibilities to activate the tool:

- From the main menu: Tools → Color Picker...
- By clicking the tool icon in the Toolbox.
- By pressing the O keyboard shortcut.
- By pressing the Ctrl key while using a paint tool. The Color-picker dialog is not opened during this operation and the tool remains unchanged after releasing the key. Nevertheless, you can get information by using the Pointer window.

5.4.2. Key modifiers



Ctrl does nothing here. But, when using a paint tool, pressing **Ctrl** allows you to pick colors without having to switch to *Color Picker* tool.

Shift

If the Use info window (Shift) option is not checked, pressing the Shift key when you click on a pixel opens the Color Picker Information window.



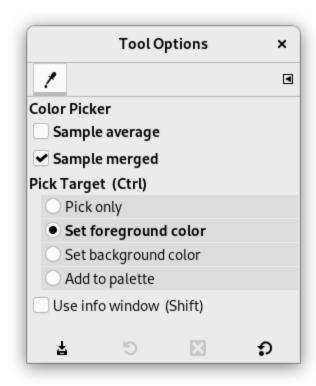
Note

The <u>Pointer Information</u> gives you the same information permanently. Note that it defaults to Sample merged.

5.4.3. Options

Figure 14.135. Tool Options Dialog

3/28/25, 12:35 PM 5.4. Color Picker



Normally, tool options are displayed in a window attached under the Toolbox as soon as you activate a tool. If they are not, you can access them from the main menu through Windows \rightarrow Dockable Windows \rightarrow Tool Options which opens the option window of the selected tool. The available tool options can also be accessed by double clicking the corresponding tool icon in the Toolbox.

Sample average

The Radius slider adjusts the size of the square area that is used to determine an average color for the final selection. When you keep clicking the layer, the mouse pointer shows the size of the square or radius.

Sample merged

If you enable this option, sampling is not calculated only from the values of the active layer, but from all visible layers.

For more information, see the Glossary entry.

Pick Target (Ctrl)

Pick only

The color of the selected pixel will be shown in an Information Dialog, but not otherwise used.

Set foreground color

The Foreground color, as shown in the <u>Color Area</u> of the Toolbox, will be set to the color of the pixel you click on.

Set background color

The Background color, as shown in the <u>Color Area</u> of the Toolbox, will be set to the color of the pixel you click on.

Add to palette

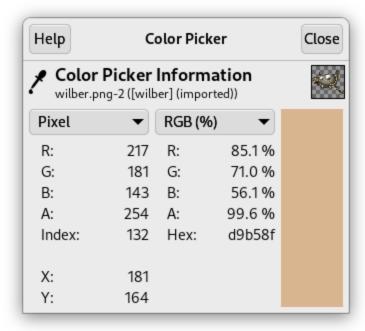
When this option box is checked, the picked color is sent to the active color palette. See Palette Editor.

Use info window (Shift)

When this option is checked, the information window is opened automatically. The **Shift** key allows you to toggle this possibility temporarily.

Figure 14.136. Color Picker Information Window

3/28/25, 12:35 PM 5.4. Color Picker



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5.5. Measure



5. Other Tools



5.5. Measure

The Measure Tool is used to gain knowledge about pixel distances in your working image. By clicking and dragging the mouse button, you can determine the angle and number of pixels between the point of click and where the mouse pointer is located. The information is displayed on the status bar or can also be displayed in the Info Window. A common use case for "Measure" is to calculate the angle of rotation when horizon is uneven on a photo. To rotate in order to straighten the horizon, click the *Straighten* button after measuring the angle.

This button can be used in straightening horizontal or vertical lines up: the starting point comes with a small bar that shows the direction.

When you pass the mouse pointer over the end point it turns to a move pointer. Then if you click you can resume the measure.

5.5.1. Status Bar

Information is displayed in the status bar, at the bottom of the Image window:

- Distance between the original point and the mouse pointer, in pixels.
- Angle, in every quadrant, from 0° to 90°.
- Pointer coordinates relative to the original point.

5.5.2. Activating the Tool

There are different possibilities to activate the tool:

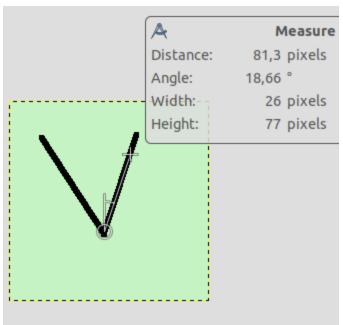
- From the main menu: Tools → Measure.
- By clicking the tool icon A in the Toolbox.

5.5.3. Key modifiers

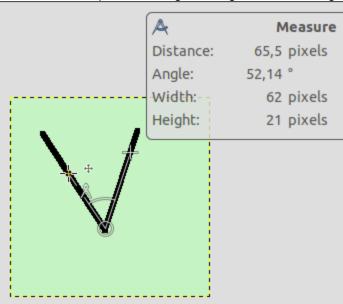


While holding down the **Shift** key, click and drag from an existing endpoint to create a second measurement line from this endpoint. The angle between the two lines will be displayed. Any endpoint can be moved by clicking and dragging. So, you can *measure any angle* on the image:

Figure 14.137. Shift modifier



Click on start point and drag following a side of the angle.



Then, Shift-click on start point and drag following the other side of the angle: you get the value of this particular angle.

Holding down the Ctrl key puts the tool into constrained straight line mode. The orientation of the line is constrained to the nearest multiple of 15 degrees.

Ctrl key pressed and click on an end point creates a horizontal guide. The mouse pointer goes with the

In Horizontal or Vertical Orientation modes, Ctrl also toggles between Horizontal and Vertical.

Alt ____

Alt key and click on an end point creates a vertical guide.

Ctrl + Alt

This key combination and click on a measure line allows to move the measure.

Ctrl + Alt key combination and click on an end point creates a vertical and a horizontal guides.

5.5.4. Options

Figure 14.138. Tool Options Dialog



Normally, tool options are displayed in a window attached under the Toolbox as soon as you activate a tool. If they are not, you can access them from the main menu through Windows \rightarrow Dockable Windows \rightarrow Tool Options which opens the option window of the selected tool. The available tool options can also be accessed by double clicking the corresponding tool icon in the Toolbox.

Orientation (Ctrl)

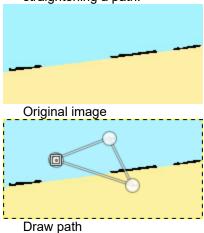
In the Auto mode (default), Straighten will snap to the smallest angle between the measure line and the vertical or horizontal direction. Horizontal and Vertical allow to override this behavior by specifying explicitly what it should be.

Use Info Window

This option will display an Info Window dialog that details the measure tool results. The results are more complete than on the status bar.

Straighten

Transform, Interpolation, and Clipping are treated in <u>Section 4.1.1, "Options"</u>. Here is an example for straightening a path:



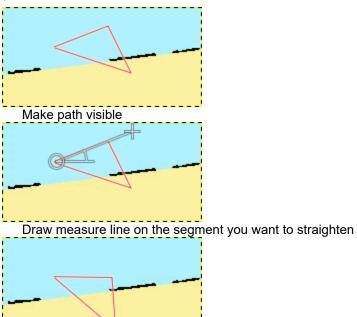
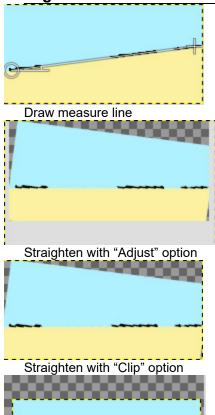


Figure 14.139. "Straighten" clipping options



Straighten

Straighten with "Crop to result" option



Straighten with "Crop with aspect" option

Straighten: click on this button to perform straightening.

5.5.5. Measuring surfaces

You can't measure surfaces directly, but you can use the <u>Histogram</u> that gives you the number of pixels in a selection.



3/28/25, 12:35 PM 5.6. Zoom

5.6. Zoom



5. Other Tools



5.6. Zoom

The Zoom Tool is used to change the zoom level of your current image. If you click on the image, the zoom is applied to the whole image. Holding **Ctrl** while doing this reverses the direction of the zoom. You can also click-and-drag the mouse to create a zoom rectangle, to fit that rectangle to the size of your image window.

5.6.1. Activating the Tool

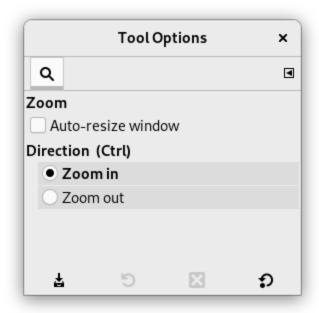
There are different possibilities to activate the tool:

- From the main menu: Tools \rightarrow Zoom.
- By clicking the tool icon Q in the Toolbox.

5.6.2. Key modifiers

5.6.3. Options

Figure 14.140. Tool Options Dialog



Normally, tool options are displayed in a window attached under the Toolbox as soon as you activate a tool. If they are not, you can access them from the main menu through Windows \rightarrow Dockable Windows \rightarrow Tool Options which opens the option window of the selected tool. The available tool options can also be accessed by double clicking the corresponding tool icon in the Toolbox.

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Auto-resize window

This setting only affects Multi-window mode.

This setting is known to not work correctly at the moment. Use the Resize window on zoom setting in the <u>Image</u> Windows Preferences instead.

Direction (Ctrl)

The two available tool toggles are used for changing the zoom direction between zooming in and zooming out.

5.6.4. Zoom menu

Using the Zoom tool is not the only way to zoom an image. The Zoom menu provides access to several functions for changing the image magnification level. For example, you can easily choose an exact magnification level from this menu.







5.5. Measure



5.7. GEGL Operation

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5.7. GEGL Operation







5.7. GEGL Operation

5.7.1. Overview

GEGL ("Generic Graphical Library") is a graph based image processing library designed to handle various image processing tasks needed in GIMP. Most GEGL operations have their own menu commands in GIMP. The majority of them are filters found in the Colors and Filters menus.

However, there are some GEGL operations that don't have their own command. Either because the operation was not considered important enough, or because the operation may still be experimental.

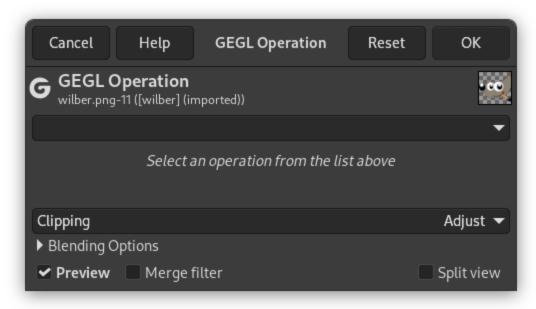
The GEGL Operation filter was added to give access to all these operations that you can't use in another way. It enables applying GEGL operations to the image and gives on-canvas previews of the results. New GEGL operations made by third-party developers will also show up in this dialog.

5.7.2. Activating the Tool

You can get to this tool only from the main menu: Tools \rightarrow GEGL Operation....

5.7.3. Options

Figure 14.141. Tool Options Dialog



GEGL Operation with no operation selected.

Operation

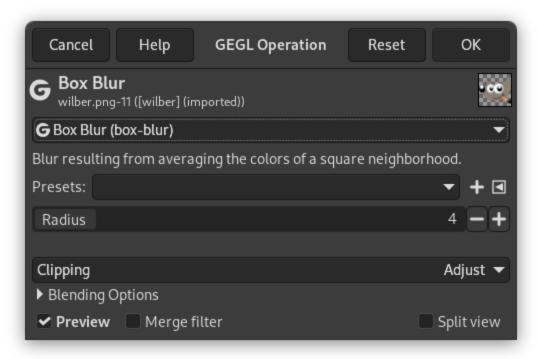
Click on this button to select the operation you want to apply to the active selection or, if there is no selection, to the

Some of these operations are very basic operations like "color" which fills the active selection or layer with the specified color, while operations like "fractal-explorer" produce fairly complex patterns — just like a <u>rendering filter</u>.

Operation Settings

The operation settings depend on the selected Operation:

Figure 14.142. "Operation Settings" example



GEGL operation "Gaussian Blur" selected.

If the options of the selected GEGL operation are not self-explanatory (guess what's the purpose of the "color" operation's "Color" option) you can look for a corresponding non-GEGL tool. For example, the <u>Fractal Explorer</u> filter may have the same or similar options as the "fractal-explorer" operation.

Or you can make use of the nice realtime preview feature and just experiment with different settings.

Preview

If this option is checked, as it is by default, you will get an on-canvas preview of the selected operation as soon as the operation is finished. You will have to press the OK button to actually apply the operation to the image.

The buttons

Reset

Pressing this button resets the operation settings to their defaults.

Cancel

Clicking on this button aborts the GEGL operation and leaves your image untouched. This is equivalent to close the dialog window using the usual Close button provided by your window manager.

OK

You have to press this button to apply the selected operation to the image. Then the dialog window will be closed.



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Chapter 15. Dialogs



Part III. Function Reference



Chapter 15. Dialogs

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1. Dialog Introduction

Dialogs are the most common means of setting options and controls in GIMP. The most important dialogs are explained in this section.







5.7. GEGL Operation

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2. Image Structure Related Dialogs

2. Image Structure Related Dialogs



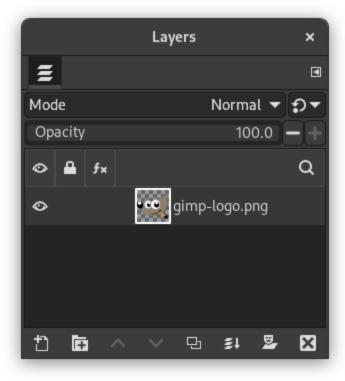


2. Image Structure Related Dialogs

The following dialogs let you control and manipulate image structures, such as layers, channels, or paths.

2.1. Layers Dialog

Figure 15.1. Layers Dialog



The "Layers" dialog is the main interface to edit, modify and manage your layers.

2.1.1. Activating the Dialog

This dialog is a dockable dialog; see the section <u>Section 2.3, "Dialogs and Docking"</u> for help on manipulating it. You can access it:

- from the main menu: Windows → Dockable Dialogs → Layers;
- from the Tab menu in any dockable dialog by clicking the <u>tab menu button</u> and selecting Add Tab → Layers.
- from the (default) shortcut: | Ctrl |+ L |.

In the Windows menu, there is a list of <u>detached windows</u> which exists only if at least one dialog remains open. In this case, you can raise the "Layers" dialog from the main menu: Windows \rightarrow Layers.

2.1.2. Using the Layers Dialog

Overview

Every layer appears in the dialog in the form of a thumbnail. When an image has multiple layers as components, they appear as a list. The upper layer in the list is the first one visible, and the lowest layer the last visible, the background. Above the list one can find characteristics related individually to each layer. Under the list one can find management buttons for the layer list. A right-click on a layer thumbnail opens the Layer context menu.

Selecting multiple layers

GIMP allows you to select multiple layers and perform actions on them. You can e.g. move them to a different location in the layer stack, scale them, etc. Selecting multiple layers is done by using the mouse and **Shift** key, for adding a range of layers, or **Ctrl** key, for adding or removing the clicked layer.

Be aware that certain actions can only be done on a single layer. If you try to use such an action, e.g. using the paintbrush, a warning message will show up telling you that you can't do that and that you have to select a single layer.

Layer list header

Directly above the layer list is the header bar. On the left are three icons that show which column is used for visibility, lock, and layer effects. In the middle a text label will tell you how many layers are currently selected if it is more than one. On the right you see a search icon. Clicking in this part opens a search dialog where you can search for layers.

Q Search layers and Saved searches

Searching layers can be useful if you have a lot of layers in your project. As soon as you start typing in the search bar, it will start finding layers that match your search and select them. Multiple layers will be selected if they all match.

Below the search bar you will see a plus icon. Clicking this allows you to add the current search as a new named set. This search, and previously defined ones, will show up below the search bar. Clicking one of these saved searches will select all the layers matching the search term. Each saved search has a close icon in the right corner, which can be used to remove that saved search.

Layer attributes

Every layer is shown in the list with its own attributes:

Layer visibility

Clicking this icon toggles whether the layer is visible or not. (Shift -clicking on the icon causes all other same-level layers to be shown or hidden alternatively. Alt -clicking on the icon causes all other selected layers on the same level to be shown or hidden alternatively.)

Lock

Clicking on the empty checkbox in the lock column of a layer opens a menu with the following options.

(Shift -clicking on an icon causes all other same-level layers to be locked or unlocked alternatively. Alt -clicking on an icon causes all other selected layers on the same level to be locked or unlocked alternatively.)

▲ Lock pixels

When this toggle button is enabled, you cannot use any brush-based tool (Paintbrush, Pencil, Eraser etc.), the Airbrush or the Ink tool on the currently selected layer. This allows you to protect them from unwanted changes.

Lock position and size

This toggle button enables or disables protection of layers from moving them around or transforming them. When this is enabled, then you cannot use any transform tool (Rotate, Shear, Perspective and others) or move it.

Lock visibility

This toggle button controls the "Lock" setting for the visibility of the layer. If this is enabled, the layer visibility cannot be changed until you disable the lock.

Lock alpha channel

This toggle button controls the "Lock" setting for the transparency of the layer. If this is enabled, the alpha channel for the layer is locked, and no manipulation has any effect on it. In particular, nothing that you do to a transparent part of the layer will have any effect.

Figure 15.2. Example for Locking Alpha Channel



The active layer has three horizontal, opaque, green stripes on a transparent background. We paint a vertical red stripe. "Lock" unchecked: Opaque and transparent areas of the active layer are painted with red.



"Lock" checked: Only opaque areas of the active layer are painted with red. Transparent areas are preserved.



Tip

If a layer name in the Layers dialog is in bold, then this layer has no Alpha channel.

f× Layer Effects

When this icon is visible, there are Layer Effects present for this layer. Clicking it will open a dialog where you will see a list of all effects added to this layer. For each effect you can change the visibility, the order of the effects, merge all effects with the layer, or remove them.

Layer Effects are filters that change the layer non-destructively, that is, they can be added, removed or changed without changing the layer itself. They instead add effects on top of the layer.

A lot of the GEGL filters in the Colors and Filters menu can be used this way. The layer effects dialog consists of the following parts:

Layer Effects List

At the top there is a list of all layer effects that have been added to this layer. Note that the effects are applied on top of the layer starting with the effect at the bottom of the list.

To the left of each effect you can see an eye icon; which can be clicked to hide or show that specific effect. Next to that is the Filter effect icon.

Buttons

The button bar at the bottom offers the following functionality:

Layer Effects Visibility

This toggle button controls the "visibility" setting for all the effects of the layer. By default all effects are visible. Clicking this hides the effects, allowing you to see the actual pixel contents of the layer.

Edit the selected filter

This button allows you to open the dialog of the selected layer effect to make changes to its settings. Alternatively you can also double click on the layer effect in the list to open the dialog.

↑ Raise layer effect

Here you can move the layer effect up in the list.

Lower laver effect

Here you can move the layer effect down in the list.

Merge all active filters

This button lets you merge all active (visible) layer effects with the contents of the layer. This removes the layer effects from the layer after the effects have been applied to the layer.

Remove the selected filter

This button removes the selected layer effect.

Layer thumbnail

The layer content is represented by a thumbnail. Maintaining left-click for a second on this thumbnail makes it larger. The border color of the layer depends on whether the layer is active or inactive.

Layer name

You can change the name of the layer by double-clicking on it. You can also use the <u>Edit Layer Attributes</u> dialog in the context menu that you get by right-clicking on the layer.



Note

When working on an animation, the name of the layer can be used to specify certain parameters. For more details see exporting animations.

Layers characteristics

Above the layer list, it is possible to specify some properties for the selected layers. The selected layers are highlighted. The properties are:

Mode

The layer mode determines how the layer interacts with the other layers. From the combo box you can access all the modes provided by GIMP. The layer modes are fully detailed in Section 2, "Layer Modes".

Opacity

By moving the slider you give more or less opacity to the layer. With a 0 opacity value, the layer is transparent and completely invisible. Don't confuse this with a Layer Mask, which sets the transparency pixel by pixel.

Layer management

Under the layer list a set of buttons allows you to perform some basic operations on the layer list.

Create new layer

Here you can create a new layer. A dialog is opened, which is described in <u>New Layer</u>. Press the **Shift** key to open a new layer with last used values.

Create new layer group

Here you can create a new layer group. A new layer is created, where you can put layers down. Layer groups are described in <u>Layer groups</u>.

↑ Raise layer

Here you can move the layer up a level in the list. Press the Shift key to move the layer to the top of the

➤ Lower layer

Here you can move the layer down a level in the list. Press the **Shift** key to move the layer to the bottom of the list.



Tip

To move a layer at the bottom of the list, it may first be necessary to add a transparency channel (also called Alpha channel) to the Background layer. To do this, right click on the Background layer and select Add Alpha channel from the menu.

☐ Duplicate layers

Here you can create a copy of the selected layers. Name of new layer is suffixed with "copy".

Merge lavers Anchor laver

The Anchor layer button is only visible when a floating selection is present. It anchors the floating selection to the previous active layer.

When there is no floating selection, the Merge layers icon ₹↓ is shown, with several possibilities:

- Merge these layers with the first visible layer below it.
- Pressing | **Shift** |: merge the layer group's layers into one normal layer.
- Pressing | Ctrl | merge all visible layers into one layer.
- Pressing | Shift |+ Ctrl |: merge all visible layers with last used values.

Add masks to layers

Add masks to selected layers.

➤ Delete layers

Here you can delete the selected layers.

More layer functions

Other functions about *layer size* are available in the <u>Layer context menu</u> you get by right clicking on the Layers dialog. You can find them also in the Layer submenu of the main menu.

You will find *merging layers functions* in the Image main menu.

Clicking-and-dragging layers

Click and hold on layer thumbnail or layer name: the thumbnail enlarges and you can move it by dragging the mouse. Selecting and moving multiple layers is also possible.

- So you can place this layer or layers somewhere else in the layer list.
- You can also *drop the layer into the Toolbox*: a new image is created that contains this layer only. This does not work with multiple selected layers.
- Finally, you can *drop the layer into another image*: this layer will be added to the layer list, above existing layers.

2.1.3. The Layers dialog context menu

By right-clicking in the Layers dialog, or by opening the Layers Menu from the tab menu, a context menu for the Layers dialog will open.

Most of the commands in this menu have already been documented above, or elsewhere:

Edit Layer Attributes...

Except for Width, Height, and Fill with, this dialog is the same as the <u>New Layer Dialog</u>. For information about the layer attributes we therefore refer to the documentation for that dialog.

Blend Space submenu

See <u>Blend space</u> in the New Layer dialog.

Composite Space submenu

See Composite space in the New Layer dialog.

Composite Mode submenu

See Composite mode in the New Layer dialog.

Color Tags submenu

See the Color tag documentation in the New Layer dialog.

New Layer..., New Layer Group, Duplicate Layers, Merge Down, Anchor Layer, Delete Layers These commands are explained above, see layer characteristics.

New from Visible

See the New from Visible menu command documentation.

Layer Boundary Size...

See the <u>Layer Boundary Size...</u> menu command documentation.

Layers to Image Size

See the <u>Layers to Image Size</u> menu command documentation.

Scale Layer...

See the Scale Layer... menu command documentation.

Add Layer Masks..., Apply Layer Masks, Delete Layer Masks, Show Layer Masks, Edit Layer Mask, Disable Layer Masks, Masks to Selection

See the Layer Mask submenu documentation for these commands.

Add Alpha Channel, Remove Alpha Channel

Only one of these will be enabled. If the current layer does not have an alpha channel, you will be able to add one. If it does, you can remove the alpha channel.

Alpha to Selection

See the Alpha to Selection menu command documentation.

Merge Visible Layers

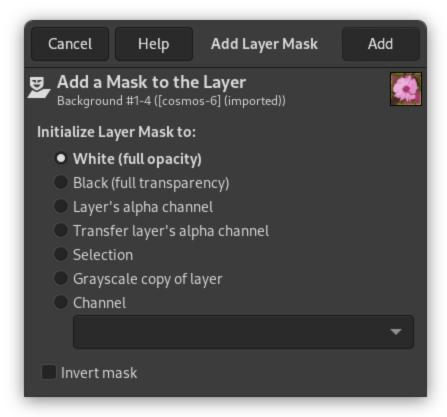
This command merges all visible layers into one layer.

Flatten Image

This command merges all layers into one layer and removes transparency.

2.1.4. Layer masks

Figure 15.3. "Add mask" dialog



Overview

A transparency mask can be added to each layer, which defines what parts of the layer are transparent or opaque. We call this a layer mask. A layer mask has the same size and same number of pixels as the layer to which it is attached. Every pixel of the mask can then be coupled with a pixel at the same location in the layer. The mask is a set of pixels in grayscale. The pixels with a value 0 are black and give a full transparency to the coupled pixel in the layer. The pixels with the maximum value (either 1.0 or 255) are white and give full opacity to the coupled pixel in the layer.

To create a layer mask start with a right click on the layer to call the context menu and select Add Layer Masks... in the menu. A dialog appears where you can initialize the content of the mask:

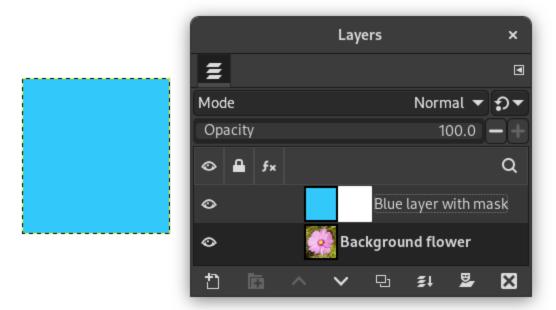
- White (full opacity): the mask is white in the Layers dialog. So, all pixels of the layer are visible in the image window since painting the mask with white makes layer pixels fully visible. You will paint with black to make layer pixels transparent.
- Black (full transparency): the mask is black in the Layers dialog. So, the layer is fully transparent since painting the mask with black makes layer pixels transparent. Painting with white will remove the mask and make layer pixels visible.
- Layer's alpha channel: the mask is initialized according to the contents of the layer's alpha channel.
- Transfer layer's alpha channel: Does the same thing as the previous option, except that it also resets the layer's alpha channel to full opacity.
- Selection: the mask is initialized according to pixel values found in the current selection.
- Grayscale copy of layer: the mask is initialized according to a grayscale representation of the pixel values of the layer.
- Channel: The layer mask is initialized with a selection mask you have created before, stored in the Channels dialog.
- Invert mask: This checkbox allows you to invert: black turns to white and white turns to black.

When the mask is created, it appears as a thumbnail next to that of the layer itself. You can select the layer or the mask for editing by clicking on their respective thumbnails. The active item has a white border (which may not be clearly visible when you have a white mask).

When working with masks, it is a good idea to keep the Layers Dialog prominently visible, because you can't see, by looking at the canvas, whether the layer or the mask is active.

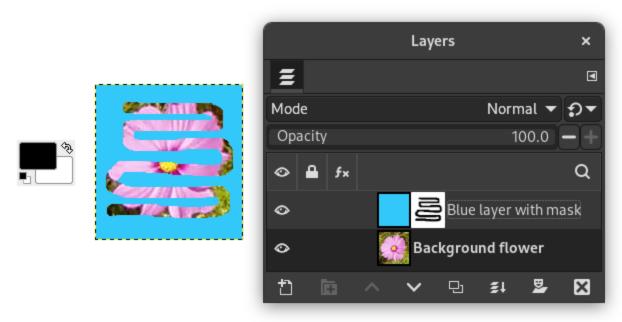
Pressing Alt (or Ctrl + Alt and clicking on the layer mask thumbnail) is equivalent to the Show Layer Mask command: the layer mask border turns to green. If you press Ctrl the border is red and the result is equivalent to the Disable Layer Mask command. To return to normal view repeat the last operation. These options are for greater convenience in your work.

Figure 15.4. A layer with layer mask



This image has a background layer with a flower and another blue layer, fully opaque. A white layer mask has been added to the blue layer. In the image window, the blue layer remains visible because a white mask makes layer pixels visible.

Figure 15.5. Painting the layer mask



The layer mask is active. You paint with black color, which makes the layer transparent: the underlying layer becomes visible.







2.2. Channels Dialog

Report a bug in GIMP Report a documentation error

3/28/25, 1:16 PM 2.2. Channels Dialog

2.2. Channels Dialog

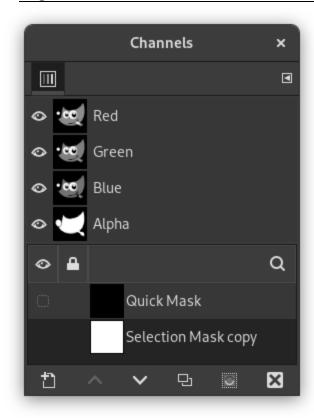


2. Image Structure Related Dialogs



2.2. Channels Dialog

Figure 15.6. The Channels dialog



The Channels dialog is the main interface to edit, modify and manage your channels. Channels have a double usage. This is why the dialog is divided into two parts: the first part for color channels and the second part for selection masks. Color channels apply to the image and not to a specific layer. Basically, three primary colors are necessary to render all the wide range of natural colors. As other digital software, GIMP uses Red, Green, and Blue as primary colors. The first and primary channels display the Red, Green, and Blue values of each pixel in your image.

Next to the channel name is a thumbnail displaying a grayscale representation of each channel, where white is 100% and black is 0% of the primary color. Alternatively, if your image is not a colored but a Grayscale image, there is only one primary channel called Gray. For an Indexed image with a fixed number of known colors there is also only one primary channel called Indexed.

Then there is an optional channel called Alpha. This channel displays transparency values of each pixel in your image (See Alpha Channel in Glossary). In front of this channel is a thumbnail displaying a grayscale representation of the transparency where white is opaque and visible, and black is transparent and invisible. If you create your image without transparency then the Alpha channel is not present, but you can add it from the Layers Dialog context menu. Also, if you have more than one layer in your image, GIMP automatically creates an Alpha channel.



Note

GIMP doesn't support CMYK or YUV color models.

Figure 15.7. Representation of an image with channels



Red channel



Green channel



Blue channel



Alpha channel



All channels

The right image is decomposed in three color channels (red, green, and blue) and the Alpha channel for transparency. On the right image the transparency is displayed as a gray checkerboard. In the color channel white is always white because all the colors are present and black is black. The red hat is visible in the red channel but quite invisible in the other channels. This is the same for plain green and blue which are visible only in their own channels and invisible in others.

2.2.1. Activating the Dialog

This dialog is a dockable dialog; see the section <u>Section 2.3, "Dialogs and Docking"</u> for help on manipulating it. You can access it:

- From the main menu through Windows → Dockable Dialogs → Channels.
- From the Tab menu in any dockable dialog by clicking on \blacksquare and selecting Add Tab \rightarrow Channels.

In the Windows menu, there is a list of <u>detached windows</u> which exists only if at least one dialog remains open. In this case, you can raise the "Channels" dialog from the main menu: Windows \rightarrow Channels.

2.2.2. Using the Channels Dialog

Overview

The Channels Dialog consists of a list of color channels and the optional Alpha channel. Below that is a list of selection mask channels. A right-click in a channel list entry opens the channel context menu. The color channels are always organized in the same order. They cannot be removed. You can only change their visibility and select or unselect them. By default, all of these channels are visible and selected. To select a channel, click on a color channel in the list. This toggles the selection of the channel, meaning a selected channel will become unselected and vice versa. The selected color channels appear highlighted in the dialog.



Caution

Unselecting one of the color channels red, blue, or green has severe consequences. For instance if you disable the blue channel, all pixels from now on added to the image will not have a blue component, and so a white pixel will have the yellow complementary color.

Making one of the color channels invisible does not influence how tools work and only changes what is currently displayed on your screen. For example, a brush will continue to paint as usual, and the eraser will change the alpha value of pixels also when the alpha channel is set to be not visible.

The selected color channels define which parts of a tool's action are applied to the layer. For example, the eraser will not change your image if the alpha channel is not selected.



Note

The duplicate and selection commands documented below can also be used on the color channels. However, this only works when accessing the command from the right-click context menu, and only for one channel at a time.

Selecting multiple channels

GIMP allows you to select multiple selection mask channels and perform actions on them. You can e.g. move them to a different location in the channels stack, and convert them to selections. Selecting multiple channels is done by using the mouse and **Shift** key, for adding a range of channels, or **Ctrl** key, for adding or removing the clicked channel.

Channel list header

Directly above the list of selection masks is the header bar. On the left you see the icons that identify the visibility and lock columns. In the middle a text label will tell you how many channels are currently selected if it is more than one.

Channel attributes

Every channel is shown in the list with its own attributes, which are very similar to the <u>layer attributes</u>:

Channel visibility

By default, all color channels are visible, and color mask channels are invisible. Clicking on the eye-symbol, or the empty space if the channel is not visible, will toggle the visibility of the channel. **Shift** -clicking on the icon causes all *other* channels to be hidden.

☐ Channel lock attributes

Each selection mask channel has lock attributes. If one of its attributes is set, the respective lock icon will show up in front of the thumbnail.

When multiple attributes are set, a double lock icon will show here. Clicking in this column allows you to change these attributes.

Lock pixels

This icon shows when "lock pixels" is enabled for the current channel. When this is enabled, the channel is locked for any action that changes pixels, meaning there will be no changes done to this channel.

Lock position and size

This icon shows when "lock position and size" is enabled for the current channel. When this is enabled, the channel is locked for any action that changes its position or size.

Lock visibility

This toggle button controls the "Lock" setting for the visibility of the channel. If this is enabled, the channel visibility cannot be changed until you disable the lock.

Thumbnail

A small preview icon represents the effect of the channel. This preview can be enlarged by holding down the left mouse button on it.

Channel name

The name of the channel, which must be unique within the image. Double-clicking on the name of a selection mask channel will allow you to edit it. The names of the primary channels (Red, Green, Blue, Alpha) can not be changed. Double-clicking on the preview icon will open a dialog where you can set all channel attributes.

Managing channels

The button bar at the bottom offers the following functionality:

New Channel

This creates a new channel. A dialog will open where you can set the Channel name, the Color tag, the channel attributes and channel attributes and clock attributes, and finally the Opacity and color used for the mask in the image window. A click on the color button displays the GIMP color selector where you can change the mask color. If you press the Shift key while clicking the New Channel button, the New Channel dialog will not be opened. Instead the new channel will be created with the same settings as used previously. This new channel is a selection mask applied over the image. See for more details Selection Mask.

↑ Raise Channels

This moves the selected channels up in the list. Press the **Shift** key to move the selected channels to the top of the list.

✓ Lower Channels

This moves selected channels down in the list. Press the **Shift** key to move the selected channels to the bottom of the list.

☐ Duplicate Channels

This creates a copy of the selected channels. The name of the new channels is suffixed with a number.



Tip

You can also duplicate color channels or the Alpha channel. It's an easy way to keep a copy of them and to use them later as a selection in an image. Note that you can only duplicate one color channel at a time, and only using the right-click context menu.

Replace the Selection with Selected Channels

This transforms the selected channels to become a selection. By default the selection derived from channels replaces the active selection. You can change this by using control keys.

- **Shift**: the selection derived from a channel is added to the active selection. The final selection is merged from both.
- **Ctrl**: the final selection is the subtraction of the selection derived from a channel from the active selection.
- **Shift** + Ctrl: the final selection is the intersection of the selection derived from a channel with the active one. Only the selected parts common to both are kept.

X Delete Channels

This deletes the selected channels.

2.2.3. Channels Context Menu

Overview

You can get the Channels context menu by right clicking on a channel. Several of the operations on channels are also available through buttons at the bottom of the channels list. Those operations are documented there. These commands, except Edit Channel Attributes..., also work when multiple channels are selected.

Edit Channel Attributes...

Only available for selection masks. Here you can change the Channel name, the Color tag, the channel attributes and lock attributes, and finally the Opacity and color used for the mask in the image window. A click on the color button displays the GIMP color selector where you can change the mask color.

Color Tags

Only available for selection masks. This allows you to assign a color tag to one or more selected channels. If you have a lot of channels this can make it easier to identify them by giving related channels the same color tag. To remove the color tag choose None.

New Channel..., Raise Channels, Lower Channels, Duplicate Channels, Delete Channels See Managing channels.

Channels to Selection

The selection derived from the selected channels replaces the previously active selection.

Add Channels to Selection

The selection derived from the selected channels is added to the active selection. The final selection is merged from both.

Subtract Channels from Selection

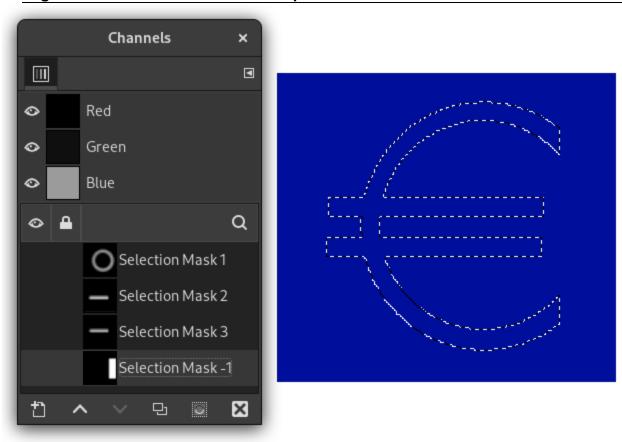
The final selection is the subtraction of the selection derived from the selected channels from the active selection.

Intersect Channels with Selection

The final selection is the intersection of the selection derived from the selected channels with the active one. Only the selected parts common to both are kept.

2.2.4. Selection masks

Figure 15.8. A selection composed out of channels.



Channels can be used to save and restore your selections. In the Channels dialog you can see a thumbnail representing the selection. Selection Masks are a graphical way to build selections into a gray level channel where white pixels are selected and black pixels are not selected. Therefore gray pixels are partially selected. You can think of them as feathering the selection, a smooth transition between selected and not selected. This is important to avoid the ugly pixelization effect when you fill the selection or when you erase its content after isolating a subject from background.

Creating Selection Masks

There are several ways to initialize a selection mask.

- From the main menu Select → Save to Channel if there is an active selection.
- In the image window the bottom-left button creates a Quick Mask; the content will be initialized with the active selection.
- From the Channels dialog, when you click on the New channel button or from the context menu. When created, this Selection mask appears in the Channels dialog, named "Selection maskcopy" with a queuing number. You can change this by using the context menu that you get by right-clicking on the channel.

2.2.4.1. Using Selection Masks

Once the channel is initialized, selected (highlighted in blue), visible (eye-icon in the dialog), and displayed as you want (color and opacity attributes), you can start to work with all the paint tools. The colors used are important. If you paint with some color other than white, gray, or black, the color Value (luminosity) will be used to define a gray (medium, light, or dark). When your mask is painted, you can transform it to a selection by clicking on the button (Channel to Selection) or from the context menu.

You can work in selection masks not only with the paint tool but also with other tools. For instance, you can use the selection tools to fill areas uniformly with gradients or patterns. By adding many selection masks in your list you can easily compose very complex selections. One can say that a selection mask is to a selection as a layer is to an image.

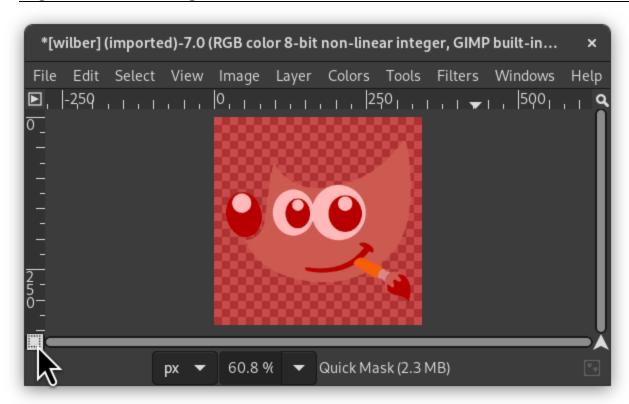


Caution

As long as a selection mask is activated you are working in the mask and not in the image. To work in the image you have to deactivate all selection masks. Don't forget also to stop displaying masks in the image by removing the eye icon. Check also that all RGB and Alpha channels are activated and displayed in the image.

2.2.5. Quick Mask

Figure 15.9. Dialog Quick Mask



A Quick Mask is a <u>Selection Mask</u> intended to be used temporarily to paint a selection. Temporarily means that, unlike a normal selection mask, it will be deleted from the channel list after its transformation to selection. The <u>selection tools</u> sometimes show their limits when they have to be used for doing complex drawing selection, as progressive. In this case, using the Quick Mask is a good idea which can give very good results.

2.2.5.1. Activating the Dialog

The Quick Mask can be activated in different ways:

- From the main menu: Select → Toggle Quick Mask.
- By clicking the bottom-left button highlighted in the screenshot.
- By using the | Shift |+ | Q | shortcut.

2.2.5.2. Creating a Quick Mask

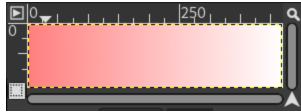
To initialize a Quick Mask, click the bottom-left button in the image window. If a selection was active in your image, then its content appears unchanged while the border is covered with a translucent red color. If no selection was active then all the image is covered with a translucent red color. Another click on the bottom-left button will deactivate the quick mask.

From the Channels dialog you can double click on the name or the thumbnail to edit the QMask attributes. Then you can change the Opacity and its filling color. At every moment you can hide the mask by clicking on the eye icon in front of the QMask.

The mask is coded in gray tones, so you must use white or gray to decrease the area limited by the mask and black to increase it. The area painted in light or dark gray will be transition areas for the selection like feathering. When your mask is ready, click again on the bottom-left button in the image window and the quick mask will be removed from the channel list and converted to a selection.

Quick mask's purpose is to paint a selection and its transitions with the paint tools without worrying about managing selection masks. It's a good way to isolate a subject in a picture because once the selection is made you only have to remove its content (or inverse if the subject is in the selection).

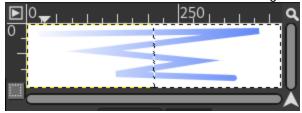
2.2.5.3. Using Quick Mask with a gradient



Screenshot of the image window with activated Quick Mask. As long as the Quick Mask is activated, all operations are done on it. A gradient from black (left) to white (right) has been applied to the mask.



The Quick Mask is now disabled. The selection occupies the right half part of the image (<u>marching ants</u>) because the limit of the selection is at the middle of the gradient.



A stroke is now added during the enabled selection. Weird! The gradient, although not visible, remains active all over the image, in selected and non selected areas!

After the Quick Mask Button is pressed, the command generates a temporary 8-bit (0-255) channel, on which the progressive selection work is stored. If a selection is already present the mask is initialized with the content of the selection. Once Quick Mask has been activated, the image is covered by a red semi-transparent veil. This one represents the non-selected pixels. Any <u>paint tool</u> can be used to create the selection on the Quick Mask. They should use only grayscale color, conforming the channel properties, white enabling to define the future selected place. The selection will be displayed as soon as the Quick Mask will be toggled but its temporary channel will not be available anymore.



Tip

To save in a channel the selection done with the Quick Mask select in the main menu Select \rightarrow Save to Channel.

2.2.5.4. Usage

3/28/25, 1:16 PM 2.2. Channels Dialog

- 1. <u>Open</u> an image or begin a <u>new document</u>.
- 2. Activate the Quick Mask using the left-bottom button in the image window. If a selection is present the mask is initialized with the content of the selection.
- 3. Choose a <u>drawing tool</u> and use it with grayscale colors on the Quick Mask.
- 4. Deactivate the Quick Mask using the left-bottom button in the image window.







2. Image Structure Related Dialogs



2.3. Paths Dialog

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3/28/25, 1:16 PM 2.3. Paths Dialog

2.3. Paths Dialog



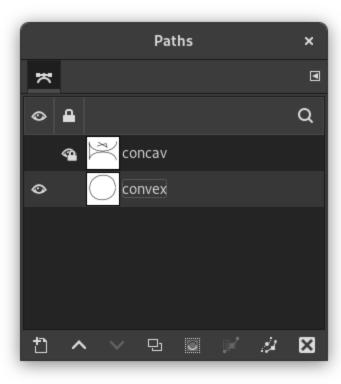
2. Image Structure Related Dialogs



2.3. Paths Dialog

The "Paths" dialog is used to manage paths, allowing you to create or delete them, save them, convert them to and from selections, etc. Please see <u>Section 4, " Paths "</u> for more information about paths.

Figure 15.10. The "Paths" dialog



2.3.1. Activating the Dialog

This dialog is a dockable dialog; see the section <u>Section 2.3, "Dialogs and Docking"</u> for help on manipulating it. You can access it:

- From the main menu, as Windows → Dockable Dialogs → Paths.
- From the Tab menu in any dockable dialog by clicking on \blacksquare and selecting Add Tab \rightarrow Paths.

In the Windows menu, there is a list of <u>detached windows</u> which exists only if at least one dialog remains open. In this case, you can raise the "Paths" dialog from the main menu: Windows \rightarrow Paths.

2.3.2. Using the Paths Dialog

Overview

This dialog shows a list of all paths present in the current image. For each path you can set their attributes, as explained below, and perform certain actions using the <u>buttons</u> at the bottom of the dialog, or using the <u>context menu</u>.

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In multi-window mode, you can show the name of the active image at the top of the dock by choosing "Show Image Selection" from the Tab menu. This allows you to see at a glance to which image the paths you are working on belong.

If the list is non-empty, at any given moment one of the members is the image's *active path*, which will be the subject of any operations you perform using the dialog menu or the buttons at the bottom: the active path is shown highlighted in the list. Clicking on any of the entries will make it the active path.

Right-clicking on any entry in the list brings up the <u>Paths Menu</u>. You can also access the Paths Menu from the dialog Tab menu.

Selecting multiple paths

GIMP allows you to select multiple paths and perform actions on them, like stroking or filling. Selecting multiple paths is done by using the mouse and **Shift** key, for adding a range of paths, or **Ctrl** key, for adding or removing the clicked path.

Path list header

Directly above the list of paths is the header bar. On the left you see the icons that identify the visibility and lock columns. In the middle a text label will tell you how many paths are currently selected if it is more than one.

Path attributes

Every path is shown in the list with its own attributes, which are very similar to the layer attributes:

Path visibility

By default, paths are not visible. This icon is shown when the path is visible. Clicking this toggles between visible and invisible. When a path is "visible", a border is <u>drawn</u> over each path segment on the image display. This does not change the actual pixel data of the image. **Shift** clicking on the icon causes all *other* paths to be hidden.

Path lock attributes

Each path has lock attributes. If one of its attributes is set, the respective lock icon will show up in front of the thumbnail.

When multiple attributes are set, a double lock icon will show here. Clicking in this column allows you to change these attributes.

Lock path

This icon shows when "lock path" is enabled for the current path. When this is enabled, the path is locked for any action that changes it, meaning there will be no changes done to this path. Clicking the icon toggles between enabled and disabled.

Lock position and size

This icon shows when "lock path position" is enabled for the current path. When this is enabled, the path is locked for any action that changes its position. Clicking the icon toggles between enabled and disabled.

Lock visibility

This toggle button controls the "Lock" setting for the visibility of the path. If this is enabled, the path visibility cannot be changed until you disable the lock.

Thumbnail

A small preview icon represents the effect of the path. This preview can be enlarged by holding down the left mouse button on it. If you drag the thumbnail into the Layers dialog, it will create a new layer with a rasterized copy of the path.

Path Name

The name of the path, which must be unique within the image. Double-clicking on the name will allow you to edit it. If the name you create already exists, a number will be appended (e.g., "#1") to make it unique.

Managing paths

The button bar at the bottom offers the following functionality:

These buttons correspond to entries in the context menu (accessed by right-clicking on an entry in the list), but some of them have extra options obtainable by holding down modifier keys while pressing the button.

New Path

See New Path. Holding down Shift makes a new (empty) path with the last used values, without opening the New Path dialog.

▲ Raise Paths

See Raise Paths. Holding down | Shift | moves the selected paths to the top of the list.

✓ Lower Paths

See Lower Paths. Holding down | Shift | moves the selected paths to the bottom of the list.

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민 Duplicate Paths

See Duplicate Paths.



Paths to Selection

Converts paths into a selection; see Paths to Selection for a full explanation. You can use modifier keys to set the way the new selection interacts with the existing selection:

Modifiers Action None Replace existing selection Shift Add to selection Ctrl Subtract from selection Shift + Ctrl Intersect with selection.

Selection to Path

Shift |-clicking this button brings up the Advanced Settings dialog that allows you to adjust how the selection is converted to a path.

Paint along the paths

See Stroke Paths. Holding down | Shift | strokes the paths based on the last used values without opening the Stroke Paths dialog.

X Delete Paths

Delete Paths deletes the currently selected paths.

2.3.3. The "Paths" context menu

The Paths menu can be brought up by right-clicking on a path entry in the list in the Paths dialog, or by choosing the top entry ("Paths Menu") from the Paths dialog Tab menu. This menu gives you access to most of the operations that affect paths.

Edit Path

Edit Path is an alternative way to activate the Paths tool, used for creating and manipulating paths. It can also be activated from the Toolbox, or by using the keyboard shortcut | B |.

Edit Path Attributes

Edit Path Attributes brings up a small dialog that allows you to change the name of the path. You can also do this by double-clicking on the name in the list in the Paths dialog.

Color Tags

Color Tags brings up a sub menu, similar to the one in the Layers Dialog, that allows you to select a color tag for the selected paths.

New Path

New Path creates a new path, adds it to the list in the Paths dialog, and makes it the active path for the image. It brings up a dialog that allows you to give a name to the path. The new path is created with no anchor points, so you will need to use the Path tool to give it some before you can use it for anything.

Raise Paths

Raise Paths moves the selected paths one slot higher in the list in the Paths dialog.

The position of a path in the list has no functional significance, so this is simply a convenience to help you keep things organized.

Lower Paths

Lower Paths moves the selected paths one slot lower in the list in the Paths dialog.

The position of a path in the list has no functional significance, so this is simply a convenience to help you keep things organized.

Duplicate Paths

Duplicate Paths creates a copy of the selected paths, assigns unique names, adds them to the list in the Paths dialog, and makes them the selected paths for the image. The copies will be visible only if the original paths were visible.

Delete Paths

Delete Paths deletes the currently selected paths.

Merge Visible Paths

Merge Visible Paths takes all the paths in the image that are visible (that is, all that show "open eye" symbols in the Paths dialog), and turns them into components of a single path. This may be convenient if you want to stroke them all in the same way, etc.

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Paths to Selection, Add Paths to Selection, Subtract Paths from Selection, Intersect Paths with Selection

These commands all convert the active paths into a selection, and then combine it with the existing selection in the specified ways. (Paths to Selection discards the existing selection and replaces it with one formed from the path.) If necessary, any unclosed components of the path are closed by connecting the last anchor point to the first anchor point with a straight line. The "marching ants" for the resulting selection should closely follow the path, but don't expect the correspondence to be perfect.

Selection to Path

This operation can be accessed in several ways:

- From the main menu, as Select → To Path
- From the Paths dialog menu, as Selection to Path.
- From the Selection to Path button at the bottom of the Paths dialog.

Selection to Path creates a new path from the image's selection. In most cases the resulting path will closely follow the "marching ants" of the selection, but the correspondence will not usually be perfect.

Converting a two-dimensional selection mask into a one-dimensional path involves some rather tricky algorithms: you can alter the way it is done using the Advanced Options, which are accessed by holding down the **Shift** key while pressing the Selection to Path button at the bottom of the Paths dialog. This brings up the Advanced Settings dialog, which allows you to set a lot of different options. In general, Selection to Path will do what you expect it to, without the need to adjust the advanced settings.

Fill Paths

This operation can be accessed in several ways:

- From the main menu, as Edit → Fill Paths...
- From the Paths dialog menu, as Fill Paths....
- From the Fill Paths button in the Tool Options for the Paths tool.

Fill Paths fills all areas delimited by the selected paths with the current foreground color or currently selected pattern. See the section about <u>Fill Paths</u> for more information.

Stroke Paths...

This operation can be accessed in several ways:

- From the main menu, as Edit → Stroke Paths...
- From the Paths dialog menu, as Stroke Paths....
- From the Paint along the path button at the bottom of the Paths dialog.
- From the Stroke Paths button in the Tool Options for the Paths tool.

Stroke Paths renders the selected paths on the active layer of the image, permitting a wide variety of line styles and stroking options. See the sections about <u>Stroke Paths</u> and <u>Stroking</u> for more information.

Copy Paths

Copy Paths copies the selected paths to the Paths Clipboard, enabling you to paste it into a different image.



Tip

You can also copy and paste paths by dragging their icon from the Paths dialog into the target image's display.



Note

When you copy a path to an image, it is not visible. You have to make it visible in the Paths dialog.

Paste Path

Paste Path creates a new path from the contents of the Path Clipboard, adds it to the list in the Paths dialog, and makes it the active path for the image. If no path has previously been copied into the clipboard, the menu entry will be disabled.

Export Paths

Export Paths... allows you to save a path to a file: it pops up a file save dialog that allows you to specify the file name and location. You can later add this path to any GIMP image using the Import Path command. The format used for saving paths is SVG: this means that vector-graphics programs such as Inkscape will also be able to import the paths you save. See the Paths section for more information on SVG files and how they relate to GIMP paths.

Import Path

Import Path... creates a new path from an SVG file: it pops up a file chooser dialog that allows you to navigate to the file. See the <u>Paths</u> section for information on SVG files and how they relate to GIMP paths.

3/28/25, 1:16 PM 2.3. Paths Dialog



2.2. Channels Dialog



2.4. Colormap Dialog

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2.4. Colormap Dialog



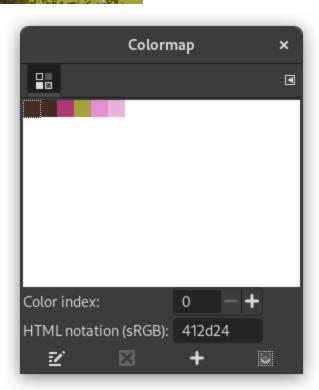
2. Image Structure Related Dialogs



2.4. Colormap Dialog

Figure 15.11. An indexed image with 6 colors and its Colormap dialog





The Colormap (Indexed Palette is a better name) dialog allows you to edit the colormap of an indexed image. (If the mode of the active image is RGB or Grayscale instead of Indexed, the dialog is empty and unusable.)

2.4.1. Activating the Dialog

This dialog is a dockable dialog; see the section <u>Section 2.3, "Dialogs and Docking"</u> for help on manipulating it. You can access it:

- from the main menu: Windows → Dockable Dialogs → Colormap;
- from the Tab menu in any dockable dialog by clicking the <u>tab menu button</u> and selecting Add Tab → Colormap.

In the Windows menu, there is a list of <u>detached windows</u> which exists only if at least one dialog remains open. In this case, you can raise the "Colormap" dialog from the main menu: Windows → Colormap.

2.4.2. Colormaps and Indexed Images

In an Indexed image, instead of being assigned a color directly (as happens in RGB and Grayscale images), colors are assigned to pixels by an indirect method, using a look-up table called a *colormap*.

To determine the color that should be shown for that pixel, GIMP looks up the index in the image's colormap. Each indexed image has its own private colormap. In GIMP, the maximum number of entries in a colormap is 256. For a maximum-sized colormap, each index from 0 to 255 is assigned an arbitrary RGB color. There are no rules restricting the colors that can be assigned to an index or the order they appear in: any index can be assigned any color. It is important to realize that the colors in the colormap are the *only colors available* for an indexed image (that is, unless you add new colors to the colormap). This has a major effect on many GIMP operations: for example, in a pattern fill, GIMP will usually not be able to find exactly the right colors in the colormap, so it will approximate them by using the nearest color available. This is sometimes referred to as *Quantization*. If the colormap is too limited or poorly chosen, this can easily produce very poor image quality.

The Colormap dialog allows you to alter the colormap for an image, either by creating new entries, or by changing the colors for the existing entries. If you change the color associated with a given index, you will see the changes reflected throughout the image, as a color shift for all pixels that are assigned that index. The entries are numbered with 0 in the upper left corner, 1 to its right, etc.

2.4.3. Using the Colormap dialog

Here are the operations you can perform using this dialog:

Click on a color entry

This sets GIMP's foreground color to the color you click on, as shown in the Toolbox color area. As a result, this color will be used for the next painting operation you do.

Ctrl -click on a color entry

This sets GIMP's background color to the color you | Ctrl |-click on, as shown in the Toolbox color area.

Double-click on a color entry

This sets GIMP's foreground color to the color you click on, and also brings up a Color Editor that allows you to change that colormap entry to a new color.

Color index

You can select a different colormap entry by typing its index here, or clicking the spinbutton to the right.

HTMI notation

This area shows a hex-code representation (such as is used in HTML) for the color assigned to the currently selected colormap entry. You can edit the color here, instead of using a Color Editor, if you want to. See
HTML notation">HTML notation

Buttons

The button bar at the bottom offers the following functionality:

Edit color

This button (in the lower left corner of the dialog) brings up a Color Editor that allows you to change the color for the currently selected colormap entry. The effect is similar to double-clicking on the entry, except that it does not set GIMP's foreground color.

X Delete color

This button (in the lower left corner of the dialog) allows you to delete a color which is not used in the image from the colormap.

+ Add color

This button (at the bottom of the dialog) allows you to add new colors to the colormap. If you click on the button, the current foreground color, as shown in the Toolbox, will be added to the end of the colormap. If instead you hold down Ctrl and click, the background color from the Toolbox will be added.



Note

The colormap can not contain more than 256 entries. If it already has 256 entries, trying to add a color will have no effect.

Select all pixels with this color

This button allows you to select all pixels with this color. To add to the selection, use | Shift | buttonclick, to subtract use | Ctrl | buttonclick, and to intersect with the current selection use | Shift | + Ctrl | buttonclick.



Tip

If you make a mistake, you can undo it by focusing the pointer in the image whose colormap you have changed, and then pressing Ctrl + Z or choosing Edit \rightarrow Undo in the main menu.



Note

If you paint an indexed image with a color which is not in the Colormap, GIMP will use the most similar color of the Colormap.

2.4.4. The Colormap context menu

Right-clicking on a color in the Colormap selects this color and opens a context menu with the following options:

Edit color

This command opens a color selector which allows you to modify the color.

Add Color from FG

This command is enabled only if the indexed palette contains less than 256 colors. The background color of the Toolbox is appended to the color map.

Add Color from BG

This command is enabled only if the indexed palette contains less than 256 colors. The background color of the Toolbox is appended to the color list.

Select this Color

This selects all pixels in the image which have the chosen palette index.

Add to Selection

Adds all pixels in the image which have the chosen palette index to the selection.

Subtract from Selection

Subtracts all pixels in the image which have the chosen palette index from the selection.

Intersect with Selection

Intersect all pixels in the image with the chosen palette index with the current selection.

Rearrange Colormap

Rearrange Colormap: This command is described in Section 8.34, "Rearrange Colormap".







2.3. Paths Dialog



2.5. Histogram Dialog

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2.5. Histogram Dialog

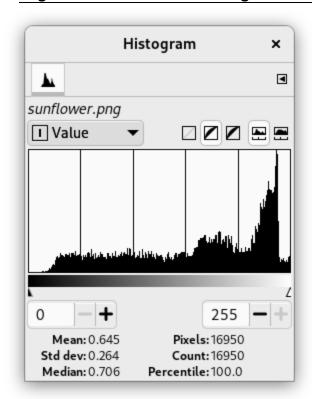


2. Image Structure Related Dialogs



2.5. Histogram Dialog

Figure 15.12. The Histogram dialog



The Histogram dialog shows you information about the statistical distribution of color values in the active layer or selection. This information is often useful when you are trying to *color balance* an image. However, the Histogram dialog is purely informational: nothing you do with it will cause any change to the image. If you want to perform a histogram-based color correction, use the Levels tool.

2.5.1. Activating the Dialog

This dialog is a dockable dialog; see the section <u>Section 2.3, "Dialogs and Docking"</u> for help on manipulating it. You can access it:

- from the main menu: Windows \rightarrow Dockable Dialogs \rightarrow Histogram.
- from the Tab menu in any dockable dialog by clicking the <u>tab menu button</u> \blacksquare and selecting Add Tab \rightarrow Histogram,
- from the main menu: Colors → Info → Histogram.

In the Windows menu, there is a list of <u>detached windows</u> which exists only if at least one dialog remains open. In this case, you can raise the "Histogram" dialog from the main menu: Windows \rightarrow Histogram.

2.5.2. About Histograms

In GIMP, each layer of an image can be decomposed into one or more color channels: for an RGB image, into R, G, and B channels; for a grayscale image, into a single Value channel. Layers that support transparency have an additional channel, the alpha channel. Each channel supports a range of intensity levels from 0 to 255 (integer valued). Thus, a black pixel is encoded by 0 on all color channels; a white pixel by 255 on all color channels. A transparent pixel is encoded by 0 on the alpha channel; an opaque pixel by 255.

For RGB images, it is convenient to define a Value "pseudochannel". This is not a real color channel: it does not reflect any information stored directly in the image. Instead, the Value at a pixel is given by the equation $V = \max(R,G,B)$. Essentially, the Value is what you would get at that pixel if you converted the image to Grayscale mode.

For more information on channels, please consult the <u>Section 1, "Image Types"</u>.

2.5.3. Using the Histogram dialog

The active layer name is shown at the top of the dialog.

Channel

The drop-down below the active layer name allows you to select which channel to use. The available options depend on the layer type of the active layer. Possible options are:

Value

For RGB and Grayscale images, this shows the distribution of brightness values across the layer. For a grayscale image, these are read directly from the image data. For an RGB image, they are taken from the Value pseudochannel.

For an indexed image, the "Value" channel actually shows the distribution of frequencies for each colormap index: thus, it is a "pseudocolor" histogram rather than a true color histogram.

Red, Green, Blue

These only appear for layers from RGB images. They show the distribution of intensity levels for the Red, Green, or Blue channels respectively.

Alpha

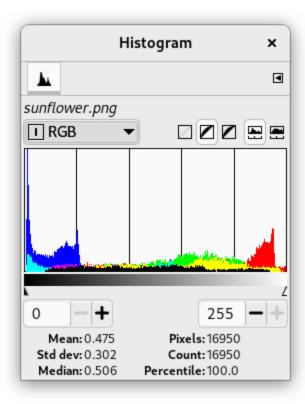
This shows the distribution of opacity levels. If the layer is completely transparent (alpha = 0) or completely opaque (alpha = 255), the histogram will consist of a single bar on the left or right edge.

Luminance

This shows the distribution of lightness intensity.

RGB

Figure 15.13. Combined histograms of R, G, and B channels.



This entry, only available for RGB layers, shows the R, G, and B histograms superimposed, so that you can see all of the color distribution information in a single view.

☐ Linear , ☐ Non-Linear , ☐ Perceptual

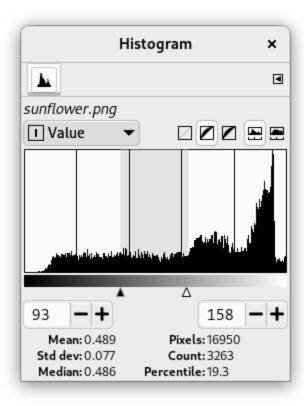
These three buttons determine whether the tone reproduction (TRC) will be displayed using a linear, non-linear, or perceptual X axis.

lacktriangleq Linear histogram , lacktriangleq Logarithmic histogram

These two buttons determine whether the histogram will be displayed using a linear or logarithmic Y axis. For images taken from photographs, the linear mode is most commonly useful. For images that contain substantial areas of constant color, though, a linear histogram will often be dominated by a single bar, and a logarithmic histogram will often be more useful.

Range Setting

Figure 15.14. Dialog aspect after range fixing.



You can restrict the analysis, for the statistics shown at the bottom of the dialog, to a limited range of values if you wish. You can set the range in one of three ways:

- Click and drag the pointer across the histogram display area, from the lowest level to the highest level of the range you want.
- Click and drag the black or white triangles on the slider below the histogram.
- Use the spinbutton entries below the slider (left entry: bottom of range; right entry: top of range).

Statistics

At the bottom of the dialog some basic statistics are shown describing the distribution of channel values, restricted to the selected range:

- Mean: the mean value of the interval in the selected channel.
- Std Dev: Standard deviation. Gives an idea about how homogeneous the distribution of values in the interval is.
- Median: For example, the value of the fiftieth peak in a 100 peaks interval.
- Pixels: The number of pixels in the active layer or selection.
- Count: The number of pixels in a peak (when you click on the histogram) or in the interval.
- Percentile: The ratio between the number of pixels in the interval and the total number of pixels in the active layer or selection.





1



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2.6. Navigation Dialog

2.6. Navigation Dialog



2. Image Structure Related Dialogs



2.6. Navigation Dialog

Figure 15.15. Navigation Dialog



The Navigation dialog is designed to offer easy movement around the active image if the zoom is set higher than what the image window can display. If this is the case, there is a white colored rectangle that shows the location of the current view area in respect to the image. In this rectangle, the mouse pointer takes the form of a grabbing hand; outside this rectangle, it takes the form of a hand with pointing fore-finger. To change the viewing region:

- Click outside the rectangular area with the pointing fore-finger on the wanted region.
- Click and drag the rectangular area.
- Use Shift and mouse-wheel to move horizontally, Alt and mouse-wheel to move vertically.

2.6.1. Activating the Dialog

This dialog is a dockable dialog; see the section <u>Section 2.3, "Dialogs and Docking"</u> for help on manipulating it. You can access it:

- from the main menu: Windows → Dockable Dialogs → Navigation;
- from the Tab menu in any dockable dialog by clicking the <u>tab menu button</u> and selecting Add Tab → Navigation,
- from the main menu: View → Navigation window.
- If you have <u>scrollbars enabled</u>, then you can access it more quickly (but without the zoom functions) by clicking on the A icon at the right bottom corner of the image window where both scrollbars end.

2.6.2. Using the Navigation Dialog

The slider

It allows easy zoom level control, more precise than with the Zoom command. This slider can also be moved using the mouse wheel when the mouse pointer is on the slider, or Ctrl and mouse wheel.

Buttons

- Zoom Out, Zoom In, and Zoom 1:1
 These buttons are self explanatory.
- Adjust the zoom ratio so that the image becomes fully visible

 The zoom ratio is adjusted so that the whole image becomes visible in the window as it is.
- Adjust the zoom ratio so that the window is used optimally

 The image size and the zoom are adjusted so that the image is fully displayed with the lesser zoom.
- Reduce the image window to the size of the image display
 Restore the image window to the size which allows the image to be fully displayed with the zoom unchanged.
 This command is also as menu entry available. See Section 5.8, "Shrink Wrap" for the details.

+





2.5. Histogram Dialog



2.7. Undo History Dialog

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2.7. Undo History Dialog

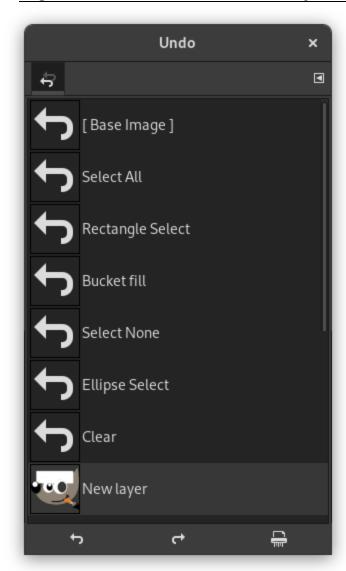


2. Image Structure Related Dialogs



2.7. Undo History Dialog

Figure 15.16. The Undo History dialog



This dialog shows you a list of the actions you have most recently performed on an image, with a small sketch that attempts to illustrate the changes produced by each. You can revert the image to any point in its Undo History simply by clicking on the right entry in the list. For more information on GIMP's Undo mechanism and how it works, see the section on <u>Undoing</u>.

2.7.1. Activating the Dialog

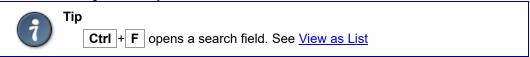
This dialog is a dockable dialog; see the section <u>Section 2.3, "Dialogs and Docking"</u> for help on manipulating it. You can access it:

from the main menu: Windows → Dockable Dialogs → Undo History.

• from the Tab menu in any dockable dialog by clicking the <u>tab menu button</u> ■ and selecting Add Tab → Undo History.

2.7.2. Using the Undo History dialog

The most basic thing you can do is to select a point in the Undo History by clicking on it in the list. You can go back and forth between states in this way as much as you please, without losing any information or consuming any resources. In most cases, the changes are very fast.



The button bar at the bottom offers the following functionality:



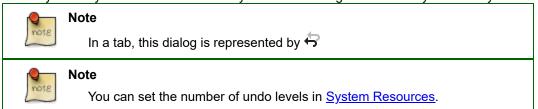
This button has the same effect as choosing Edit \rightarrow Undo from the menu, or pressing |Ctrl| + |Z|; it reverts the image to the next state back in the undo history.

Redo

This button has the same effect as choosing Edit \rightarrow Redo from the menu, or pressing |Ctrl| + |Y|; it advances the image to the next state forward in the Undo History.

Clear Undo History

This button removes all contents from the undo history except the current state. If you press it, you are asked to confirm that you really want to do this. The only reason for doing it would be if you are very constrained for memory.











2.6. Navigation Dialog



3. Image-content Related Dialogs

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3. Image-content Related Dialogs





3. Image-content Related Dialogs

3.1. FG/BG Color Dialog

The Color dialog lets you pick and manage colors. There are several different modes you can use to select colors. It also offers a color picker to select a color anywhere on your screen.

This dialog works on either the foreground or the background color.

3.1.1. Activating the Dialog

This dialog is a dockable dialog; see the section <u>Section 2.3, "Dialogs and Docking"</u> for help on manipulating it. You can access it:

- From the main menu: Windows → Dockable Dialogs → Colors.
- From the Tab menu in any dockable dialog by clicking the <u>tab menu button</u> and selecting Add Tab → Colors.
- From the toolbox: click on the current Foreground or Background color.

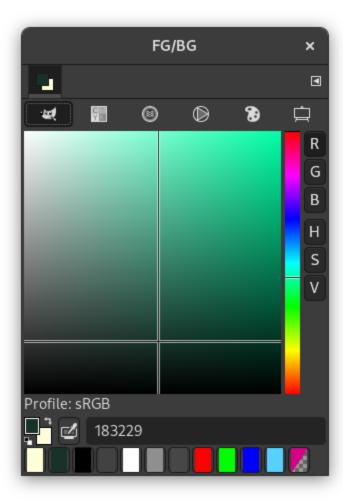
In the Windows menu, there is a list of <u>detached windows</u> which exists only if at least one dialog remains open. In this case, you can raise the "FG/BG" dialog from the main menu: Windows \rightarrow FG/BG.

3.1.2. Using the "FG/BG color" dialog

The dialog offers a number of different color selector modes at the top:

GIMP

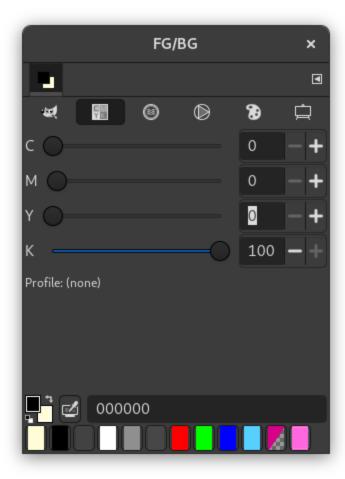
Figure 15.17. GIMP Color Selector



With the GIMP Color Selector, you select a color by clicking on a one-dimensional strip located at the right edge, and then in a two-dimensional area located on the left. The one-dimensional strip can encode any of the color parameters H, S, V, R, G, or B, as determined by which of the adjoining buttons is pressed. The two-dimensional area then encodes the two complementary color parameters.

CMYK

Figure 15.18. CMYK Color Selector



You get to this selector by clicking on the CMYK icon. The CMYK view gives you the possibility to manage colors from the CMYK color model. If a CMYK profile is attached to the image, the profile will be used to determine the CMYK colors. See Soft-Proof Profile for more information. Otherwise, a "naive" color conversion will be performed.

Watercolor

Figure 15.19. Watercolor Color Selector



This selector is a little different than the other models. The principle consists in changing the current foreground color by clicking in the rectangular palette. If the current foreground color is for example white, then it turns reddish by clicking in the red color area. Repeated clicking strengthens the effect. With the slider, which is next to the color palette, you can set the color quantity per mouse click. The higher the sliding control is, the more color is taken up per click.

Wheel

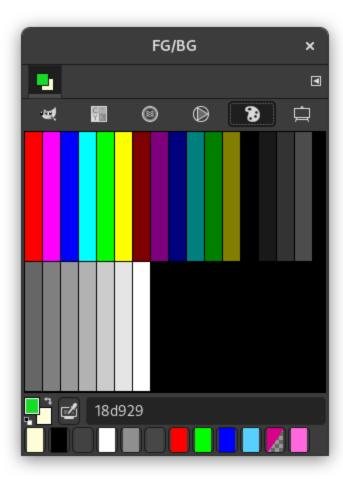
Figure 15.20. Wheel Color Selector



This selector uses the <u>HSV</u> color model. Click in the *chromatic circle* and drag the mouse pointer to select the Hue. Click-and-drag in the *triangle* to vary the Saturation (vertically) and Value (horizontally).

Palette

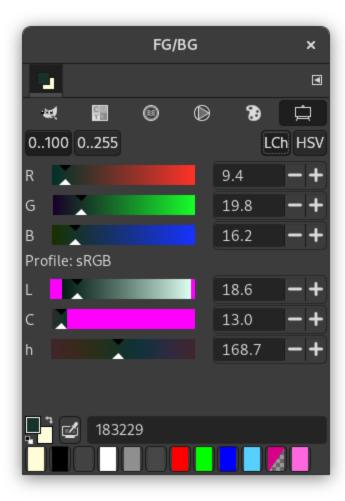
Figure 15.21. Palette Color Selector



This color selector brings up a list of the colors from the current palette in the <u>Palettes dialog</u>. You can set GIMP's foreground or background colors by clicking on colors in the colors display. You can also use the arrow keys to move within the list of colors.

Scales

Figure 15.22. Scales Color Selector



This selector displays a global view of the R, G, B channels and either the H, S, V or L, c, h values, placed in sliders. The numbers can be represented as 0 to 255 or 0.0 to 100.0 ranges.

At the bottom, further options and tools are available:

Foreground and background color

The symbol consisting of two arrows allows you to exchange the foreground and background color. At the bottom left of this icon, below the foreground color block, you find a switching surface with two small, one black and the other white, partially overlapping squares. If you click on these, the front and background color are reset to black and white respectively.

Color picker

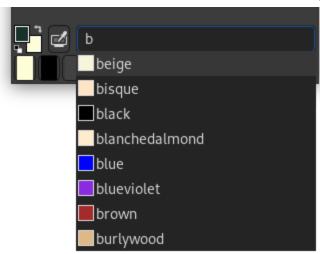
The Color Dialog color picker has a completely different behavior than the <u>color picker tool</u>. Instead of picking the colors from the active image, you're able to pick colors from the entire screen.

The downside is that you get colors after they got processed by the full system color stack, in particular color management. It means that the resulting color values may end up different from ones returned by the <u>color picker tool</u> when picking over the canvas. It is up to you to make an informed choice of which color picker to use.

HTML Notation

This is a text field with six characters. See <u>HTML notation</u>. You can also use the CSS keywords; enter the first letter of a color to get a list of colors with their keyword:

Figure 15.23. CSS keywords example



Right-clicking in the HTML Notation text box opens a context menu that allows you to edit your notation, particularly to paste a complex notation you have copied elsewhere.

Last used colors

Twelve buttons at the bottom show the last used colors. You may choose a color by clicking on one of these buttons or add the current foreground or background color to this history list.







2.7. Undo History Dialog



3.2. Brushes Dialog

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3.2. Brushes Dialog

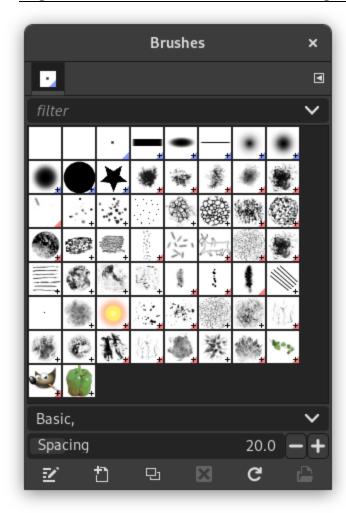


3. Image-content Related Dialogs



3.2. Brushes Dialog

Figure 15.24. The Brushes dialog



The "Brushes" dialog is used to select a brush, for use with painting tools: see the <u>Brushes</u> section for basic information on brushes and how they are used in GIMP. The dialog also gives you access to several functions for manipulating brushes. You can select a brush by clicking on it in the list: it will then be shown in the Brush/Pattern/Gradient area of the Toolbox. GIMP comes with dozens of brushes, different from each other, because the size, the ratio and the angle of every brush can be set in the tool options dialog. You can also create custom brushes using the Brush Editor, or by saving images in a special brush file format.

3.2.1. Activating the Dialog

This dialog is a dockable dialog; see the section <u>Section 2.3, "Dialogs and Docking"</u> for help on manipulating it. You can access it:

- from the Toolbox, by clicking on the brush symbol in the <u>Brush/Pattern/Gradient area</u> (if you have checked the "Show active brush, pattern and gradient" option in the <u>toolbox preferences</u>).
- From the main menu: Windows → Dockable Dialogs → Brushes;

- from the Tab menu in any dockable dialog by clicking the <u>tab menu button</u> and selecting Add Tab → Brushes.
- from the Tool Options dialog for any of the <u>paint tools</u>, by clicking on the Brush icon button, you get a popup with similar functionality that permits you to quickly choose a brush from the list; if you click on the button present on the right bottom of the popup, you open the real brush dialog.



The simplified "Brushes" dialog

The button bar at the bottom offers the following functionality:

- Smaller previews
- Larger previews
- ∘ **≔** View as list
- ∘ ⊞ View as grid
- Open the brush selection dialog

Note that, depending on your Preferences, a brush selected with the popup may only apply to the currently active tool, not to other paint tools. See the <u>Tool Option Preferences</u> section for more information.

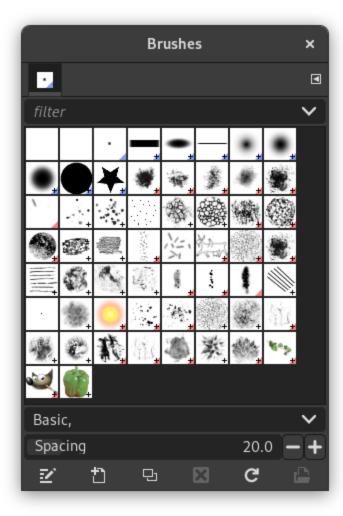
3.2.2. Using the "Brushes" dialog

3.2.2.1. Grid/List mode

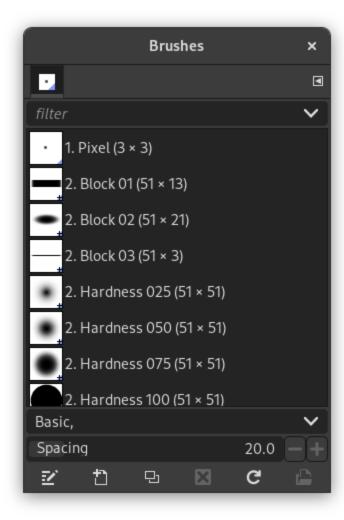
In the <u>Tab menu</u>, you can choose between View as Grid and View as List. In Grid mode, the brush shapes are laid out in a rectangular array, making it easy to see many at once and find the one you are looking for. In List mode, the shapes are lined up in a list, with the names beside them.

In the Tab menu, the option Preview Size allows you to adapt the size of brush previews to your liking.

Figure 15.25. Grid/List view



View as Grid



View as List

Grid mode

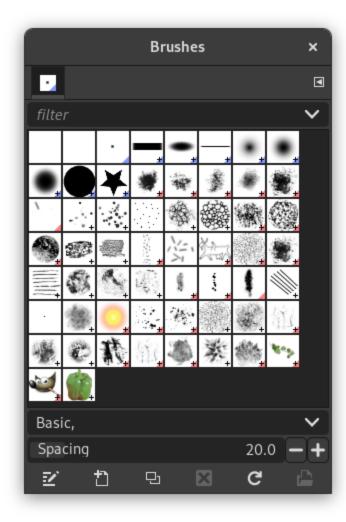
At the top of the dialog appears the name of the currently selected brush, and its size in pixels. In the center a grid view of all available brushes appears, with the currently selected one outlined.

List mode

For the most part, the dialog works the same way in List mode as in Grid mode, with one exception: If you double-click on the *name* of a brush, you will be able to edit it. Note, however, that you are only allowed to change the names of brushes that you have created or installed yourself, not the ones that come pre-installed with GIMP. If you try to rename a pre-installed brush, you will be able to edit the name, but as soon as you hit return or click somewhere else, the name will revert to its original value. It is a general rule that you cannot alter the resources that GIMP pre-installs for you: brushes, patterns, gradients, etc; only ones that you create yourself.

3.2.2.2. Brush previews

Figure 15.26. The "Brushes" dialog



When you click on a brush preview, it becomes the current brush and it gets selected in the brush area of Toolbox and the Brush option of painting tools. When you double-click on a brush preview, you will activate the <u>Brush Editor</u>. You can also click on buttons at the bottom of the dialog to perform various actions.

Meaning of the small symbols at the bottom right corner of every brush preview:

- A blue corner is for brushes in normal size. You can duplicate them.
- A small cross means that the brush preview is in a reduced size. You can get it in normal size by maintaining left click on it.
- A red corner is for animated brushes. If you maintain left click on the thumbnail, the animation is played.

3.2.2.3. Tagging

You can use tags to reorganize the brushes display. See Section 3.7, "Tagging".

3.2.2.4. Spacing

This slider lets you set the distance between consecutive brush marks when you trace out a brushstroke with the mouse pointer. Spacing is a percentage of the brush width.

3.2.2.5. Buttons at the bottom

The button bar at the bottom offers the following functionality:

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Edit Brush

This activates the <u>Brush Editor</u>. Pressing the button will open the Editor for any brush. It only works, however, for parametric brushes: for any other type, the Editor will show you the brush but not allow you to do anything with it.

New Brush

This creates a new parametric brush, initializes it with a small fuzzy round shape, and opens the Brush Editor so that you can modify it. The new brush is automatically saved in your personal <u>Brushes Folder</u>.

☐ Duplicate Brush

This button is only enabled if the currently selected brush is a parametric brush. If so, the brush is duplicated, and the Brush Editor is opened so that you can modify the copy. The result is automatically saved in your personal Brushes Folder.

X Delete Brush

This option is active for parametric brushes only. This removes all traces of the brush, both from the dialog and the folder where its file is stored, if you have permission to do so. It asks for confirmation before doing anything.

C Refresh Brushes

If you add brushes to your personal <u>Brushes Folder</u> or any other folder in your brush search path, by some means other than the Brush Editor, this button causes the list to be reloaded, so that the new entries will be available in the dialog.

Open brush as image

You can edit this image, copy it and select Edit \rightarrow Paste as \rightarrow Paste as New Brush.... This is different from Section 3.2.3, "Brush Editor" that allows to modify an existing brush.

The functions performed by these buttons can also be accessed from the dialog pop-up menu, activated by right-clicking anywhere in the brush grid/list, or by choosing the top item, Brushes menu, from the tab menu.

3.2.2.6. The "Brushes" context menu

Right clicking on a brush preview opens a context menu. Most of the commands of this submenu are described with the Buttons, except for the following.

Copy Brush Location

Copy Brush Location allows you to copy the brush path to the clipboard. After that you can use the File \rightarrow Open Location, command, to open the brush as a new image.

Show in File Manager

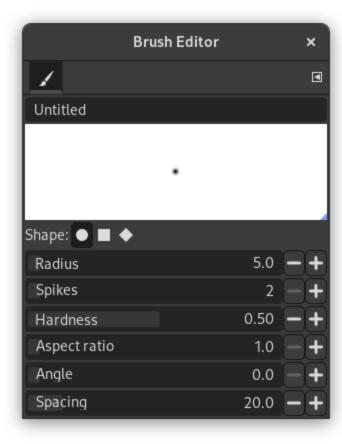
Show in File Manager opens the location of the brush in the default File Manager on your system.

Elliptical, Feathered..., Elliptical..., Rectangular, Feathered..., Rectangular...

Options to create elliptical and rectangular brushes. These brushes can be feathered, but they are not parametric brushes.

3.2.3. Brush Editor

Figure 15.27. The "Brushes" Editor dialog



The Brush Editor, activated for a new brush.

The Brush Editor allows you to view the brush parameters of a brush supplied by GIMP, and you can't change them. You can also create a custom brush: click on the New Brush button to activate the functions of the brush editor; you can select a geometrical shape, a circle, a square or a diamond. This editor has several elements:

The dialog bar: As with all dialog windows, the <u>tab menu button</u> ■ opens a menu allowing you to access and set further related options.

The title bar. To give a name to your brush.

The preview area: Brush changes appear in real time in this preview.

Settings:

Shape

A circle, a square and a diamond are available. You will modify them by using the following options:

Radius

Distance between brush center and edge, in the width direction. A square with a 10 pixels radius will have a 20 pixels side. A diamond with a 5 pixels radius will have a 10 pixels width.

Spikes

This parameter is useful only for square and diamond. With a square, increasing spikes results in a polygon. With a diamond, you get a star.

Hardness

This parameter controls the feathering of the brush border. Value = 1.00 gives a brush with a sharp border (0.00-1.00).

Aspect ratio

This parameter controls the brush Width/Height ratio. A diamond with a 5 pixels radius and an Aspect Ratio = 2, will be flattened with a 10 pixels width and a 5 pixels height (1.0-20.0).

Angle

This angle is the angle between the brush width direction, which is normally horizontal, and the horizontal direction, clock-wise. When this value increases, the brush width turns clock-wise (0° to 180°).

Spacing

When the brush draws a line, it actually stamps the brush icon repeatedly. If brush stamps are very close, you get the impression of a solid line: you get that with Spacing = 1. (1.00 to 200.0).

3.2.3.1. Brush Editor Context Menu

The Brush Editor has a context menu that can be opened with the <u>tab menu button</u> and then choosing Brush Editor Menu. It only has one option.

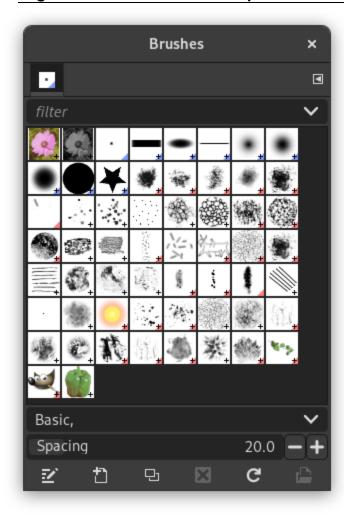
Edit Active Brush

When enabled, the brush editor will automatically load the currently active brush. If it is disabled, the brush editor will not change when the active brush changes.

3.2.4. The Clipboard Brush

When you use the Copy or Cut command on an image or a selection of it, a copy appears as a new brush in the upper left corner of the "Brushes" dialog. This brush will persist until you use the Copy command again. It disappears when you close GIMP.

Figure 15.28. A new "Clipboard Brush"





Note

You can save this clipboard brush with Edit \rightarrow Paste as \rightarrow Paste as New Brush... as soon as it appears in the "Brushes" dialog. See Section 3.10.8, "Paste as New Brush".







3. Image-content Related Dialogs

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3.3. MyPaint Brushes Dialog

3.3. MyPaint Brushes Dialog

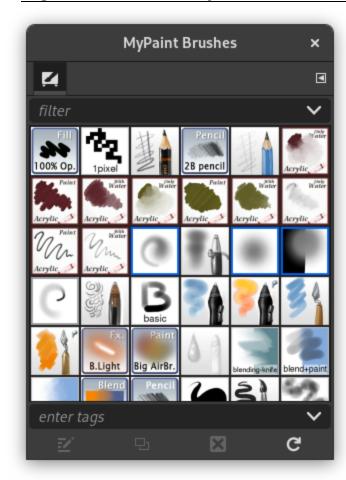


3. Image-content Related Dialogs



3.3. MyPaint Brushes Dialog

Figure 15.29. The MyPaint Brushes dialog



The "MyPaint Brushes" dialog is used to select a MyPaint brush, for use with painting tools: see the MyPaint Brush tool section for more information on MyPaint brushes and how they are used in GIMP. The dialog also gives you access to several functions for manipulating brushes. You can select a brush by clicking on it in the list: it will then be shown in the Tool Options area of the Toolbox when the MyPaint Brush is the active tool.

3.3.1. Activating the Dialog

This dialog is a dockable dialog; see the section <u>Section 2.3, "Dialogs and Docking"</u> for help on manipulating it. You can access it:

- From the main menu: Windows → Dockable Dialogs → MyPaint Brushes.
- From the Tab menu in any dockable dialog by clicking on \blacksquare and selecting Add Tab \rightarrow MyPaint Brushes.
- From the Tool Options dialog for any of the <u>paint tools</u>, by clicking on the MyPaint Brush icon button, you get a popup with similar functionality that permits you to quickly choose a brush from the list; if you click on the button present on the right bottom of the popup, you open the real MyPaint brush dialog.



The simplified "Brushes" dialog

The button bar at the bottom offers the following functionality:

- Smaller previews
- Larger previews
- ∘ **!≡** View as list
- Open the MyPaint brush selection dialog

Note that, depending on your Preferences, a brush selected with the popup may only apply to the currently active tool, not to other paint tools. See the <u>Tool Option Preferences</u> section for more information.

3.3.2. Using the "MyPaint Brushes" dialog

3.3.2.1. Grid/List mode

In the Tab menu, you can choose between View as Grid and View as List. In Grid mode, the brush shapes are laid out in a rectangular array, making it easy to see many at once and find the one you are looking for. In List mode, the shapes are lined up in a list, with the names beside them.

In the Tab menu, the option Preview Size allows you to adapt the size of brush previews to your liking.

Grid mode

At the top of the dialog appears a filter box where you can filter the MyPaint brushes shown based on their tags; and the name of the currently selected brush.

In the center a grid view of all available brushes is shown, with the currently selected one outlined. Below the grid is a box that shows the tags assigned to the currently selected brush.

List mode

For the most part, the dialog works the same way in List mode as in Grid mode, with the following exception: the name of the current brush isn't shown at the top.

3.3.2.2. MyPaint Brush previews

When you click on a brush preview, it becomes the current brush and it gets selected in the MyPaint Brush Tool Options. You can also click on buttons at the bottom of the dialog to perform various actions.

3.3.2.3. **Tagging**

You can use tags to reorganize the MyPaint brushes display. See Section 3.7, "Tagging".

3.3.2.4. Buttons at the bottom

The button bar at the bottom offers the following functionality:

Edit MyPaint Brush

This button is always disabled since GIMP does not support editing MyPaint brushes. This is also the reason why there is no create new brush button.

^밉 Duplicate Brush

This button is always disabled.

X Delete Brush

This button is always disabled.

C Refresh Brushes

If you add brushes to your personal <u>Brushes Folder</u> or any other folder in your MyPaint brushes search path, this button causes the list to be reloaded, so that the new entries will be available in the dialog.

Some of functions performed by these buttons can also be accessed from the dialog pop-up menu, activated by right-clicking anywhere in the brush grid/list, or by choosing the top item, MyPaint Brushes menu, from the dialog Tab menu.

3.3.2.5. The "MyPaint Brushes" context menu

Right clicking on a brush preview opens a context menu. Most of the commands of this submenu are described with the Buttons, except for the following.

Copy MyPaint Brush Location

Copy MyPaint Brush Location allows you to copy the MyPaint brush path to the clipboard.

Show in File Manager

Show in File Manager opens the location of the MyPaint brush in the default File Manager on your system.







3.2. Brushes Dialog



3.4. Patterns Dialog

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3.4. Patterns Dialog



3. Image-content Related Dialogs



3.4. Patterns Dialog

In GIMP, a *pattern* is a small image used to fill areas by placing copies of side by side. See the <u>Patterns</u> section for basic information on patterns and how they can be created and used.

You can use them with the <u>Bucket Fill</u> and <u>Clone</u> tools and the <u>Fill with pattern</u> command.

The "Patterns" dialog is used to select a pattern, by clicking on it in a list or grid view: the selected pattern will then be shown in the Brush/Pattern/Gradient area of the Toolbox. A few dozen more or less randomly chosen patterns are supplied with GIMP, and you can easily add new patterns of your own.

3.4.1. Activating the Dialog

This dialog is a dockable dialog; see the section <u>Section 2.3, "Dialogs and Docking"</u> for help on manipulating it. You can access it:

- From the Toolbox, by clicking on the pattern symbol in the <u>Brush/Pattern/Gradient area</u> (if you have checked the "Show active brush, pattern and gradient" option in the <u>toolbox preferences</u>).
- from the main menu: Windows → Dockable Dialogs → Patterns;
- from the Tab menu in any dockable dialog by clicking the <u>tab menu button</u> and selecting Add Tab → Patterns.
- From the Tool Options dialog of the <u>Clone tool</u> and the <u>Bucket Fill tool</u>, by clicking on the pattern source button, you get a pop-up with similar functionality that permits you to quickly choose a pattern from the list; if you clic on the Bucket Fill button present on the right bottom of the pop-up, you open the real pattern dialog. Note that, depending on your Preferences, a pattern selected with the pop-up may only apply to the currently active tool, not to other paint tools. See the <u>Tool Option Preferences</u> section for more information.

3.4.2. Using the pattern dialog

Grid/List modes

In the Tab menu, you can choose between View as Grid and View as List. In Grid mode, the patterns are laid out in a rectangular array, making it easy to see many at once and find the one you are looking for. In List mode, the patterns are lined up in a list, with the names beside them.



Tip

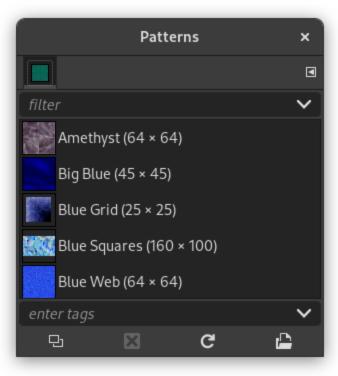
Independent of the real size of a pattern all patterns are shown the same size in the dialog. So for larger patterns this means that you see only a small portion of the pattern in the dialog at all - no matter whether you view the dialog in the list or the grid view. To see the full pattern you simply click on the pattern *and hold the mouse button* for a second.



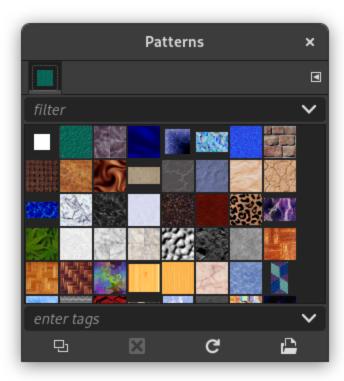
Note

In the Tab menu, the option Preview Size allows you to adapt the size of pattern previews to your liking.

Figure 15.30. The Patterns dialog



List view



Grid mode

Using the Patterns dialog (Grid mode)

At the top appears the name of the currently selected patterns, and its dimensions in pixels.

In the center appears a grid view of all available patterns, with the currently selected one outlined. Clicking on one of them sets it as GIMP's current pattern, and causes it to appear in the Brush/Pattern/Gradient area of the Toolbox.

Using the Patterns dialog (List view)

In this view, instead of a grid, you see a list of patterns, each labeled with its name and size. Clicking on a row in the list sets that pattern as GIMP's current pattern, just as it does in the grid view.

If you *double-click* on the name of a pattern, you will be able to edit the name. Note that you are only allowed to rename patterns that you have added yourself, not the ones that are supplied with GIMP. If you edit a name that you don't have permission to change, as soon as you hit return or move to a different control, the name will revert back to its previous value.

Everything else in the List view works the same way as it does in the Grid view.

Buttons

The button bar at the bottom offers the following functionality:

☐ Duplicate Pattern

Pressing this button make a copy of the current pattern. It will have the same name as the original but with "copy" added to it.

■ Delete Pattern

Pressing this button removes the pattern from the list and causes the file representing it to be deleted from disk. Note that you cannot remove any of the patterns that are supplied with GIMP and installed in the system patterns directory; you can only remove patterns that you have added to folders where you have write permission.

C Refresh Patterns

Pressing this button causes GIMP to rescan the folders in your pattern search path, adding any newly discovered patterns to the list. This button is useful if you add new patterns to a folder, and want to make them available without having to restart GIMP.

Open pattern as image

If you click on this button, the current pattern is opened in a new image window. So, you can edit it. But if you try to save it with the .pat, even with a new name, you will bang into a "Denied permission" problem because this image file is "root". But this is possible under Windows, less protected.

3.4.2.1. Patterns Context Menu

Overview

You can get the patterns context menu by right clicking on a pattern. Most of the operations on patterns are also available through buttons at the bottom of the patterns dialog. Those operations are documented there.

Open Pattern as Image, Delete Pattern, Refresh Patterns

See Patterns Dialog.

Copy Pattern Location

Copy Pattern Location allows you to copy the path of the selected pattern to the clipboard.

Show in File Manager

Show in File Manager opens the location of the pattern in the default File Manager on your system.

3.4.3. Tagging

You can use tags to reorganize the patterns display. See Section 3.7, "Tagging".

3.4.4. The Clipboard pattern

When you use the Copy or Cut command, a copy appears as a new pattern as the first entry in the Patterns dialog. This pattern will persist until you use the Copy (or Cut) command again. It will disappear when you close GIMP.

Figure 15.31. A new "Clipboard Pattern"

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Note

You can save this clipboard pattern with Edit \rightarrow Paste as \rightarrow Paste as New Pattern... as soon as it appears in the Patterns dialog. See Section 3.10.9, "Paste as New Pattern".











3.5. Gradients Dialog

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3.5. Gradients Dialog

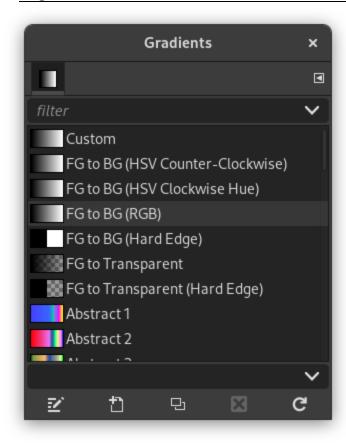


3. Image-content Related Dialogs



3.5. Gradients Dialog

Figure 15.32. The screenshot illustrates the Gradients dialog



The "Gradients" dialog offers a gradient palette which is used to select a gradient — a set of colors arranged in a linear scale — for use with the <u>Gradient tool</u> and numerous other operations. It also gives you access to several functions for manipulating gradients. You can select a gradient by clicking on it in the list: it will then be shown in the Brush/Pattern/Gradient area of the Toolbox. A few dozen nice gradients come pre-installed with GIMP. You can create more using the <u>Gradient Editor</u>. General information about gradients and how they are used in GIMP can be found in the <u>Gradients section</u>.

The first five gradients are particular: they reproduce the gradient between Foreground and background colors of toolbox in different ways.

- FG to BG (Hardedge): only black and white with a sharp limit.
- FG to BG (HSV clock-wise/counter-clockwise Hue): all hues in the color wheel between the Foreground and the background color, clockwise or counter-clockwise.
- FG to BG (RGB): default gradient, between the Foreground and the background colors of the Toolbox, in the RGB mode.
- FG to Transparent: only uses one color (the Foreground color) from complete opacity to complete transparency. This gradient is very useful when you work with softly blended collages or fog effects.

3.5.1. Activating the Dialog

This dialog is a dockable dialog; see the section <u>Section 2.3, "Dialogs and Docking"</u> for help on manipulating it.

You can access it:

- from the main menu: Windows → Dockable Dialogs → Gradients;
- from the Tab menu in any dockable dialog by clicking the <u>tab menu button</u> and selecting Add Tab → Gradients.
- from the Toolbox, by clicking on the current gradient in the <u>Brush/Pattern/Gradient area</u> (if you have checked the "Show active brush, pattern and gradient" option in the toolbox preferences).
- From the image by using the Ctrl + G shortcut.

In the Windows menu, there is a list of <u>detached windows</u> which exists only if at least one dialog remains open. In this case, you can raise the "Gradients" dialog from the main menu: Windows \rightarrow Gradients.

3.5.2. Using the "Gradients" dialog

The most basic, and most commonly used, operation with the dialog is simply to click on one of the gradients in the scrollable list, in order to make it GIMP's current gradient, which will then be used by any operation that involves a gradient.

If you *double-click* on a gradient, you open the Gradient Editor where you will be able to edit its name. Note, however, that you are only allowed to change the names of gradients that you have created yourself, not the ones that come preinstalled with GIMP. If you try to rename a pre-installed gradient, you will be able to edit the name, but as soon as you hit return or click somewhere else, the name will revert to its original value. It is a general rule that you cannot alter the resources that GIMP pre-installs for you: brushes, patterns, gradients, etc; only ones that you create yourself.

Grid/List modes

In the Tab menu, you can choose between View as Grid and View as List. In Grid mode, the gradients are laid out in a rectangular array. They look quite dazzling when viewed this way, but it is not very easy to pick the one you want, because of visual interference from the neighboring ones. In List mode, the more usable default, the gradients are lined up vertically, with each row showing its name.

In the Tab menu, the option Preview Size allows you to adapt the size of gradient previews to your liking.

The button bar at the bottom offers the following functionality:

Edit Gradient

This button activates the Gradient Editor.

New Gradient

This creates a new gradient, initialized as a simple grayscale, and activates the Gradient Editor so that you can alter it

Gradients that you create are automatically saved in the <code>gradients</code> folder of your personal GIMP directory. Any gradient files (ending with the extension <code>.ggr</code>) found in one of these folders, will automatically be loaded when you start GIMP. You can add more directories to the gradient search path, if you want to, in the Gradients tab of the <code>Data Folders</code> section of the Preferences dialog.

☐ Duplicate Gradient

This creates a copy of the currently selected gradient. You will be able to edit the copy as editing the original is not supported.

X Delete Gradient

This removes all traces of the gradient, if you have permission to do so. It asks for confirmation before doing anything.

C Refresh Gradients

If you add gradients to your personal gradients folder by some means other than this dialog, this button causes the list to be reloaded, so that the new entries will be available.

The functions performed by these buttons can also be accessed from the dialog pop-up menu, activated by rightclicking anywhere in the gradient list, or via Gradient Menu in the Tab menu.

The gradient menu also gives you some additional functions:

Save as POV-Ray...

This allows you to save the gradient in the format used by the POV-Ray 3D ray-tracing program.

Copy Gradient Location

This command allows you to copy the gradient file location to the clipboard. You can then use it in a text editor.

Show in File Manager

Show in File Manager opens the location of the gradient in the default File Manager on your system.

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Custom Gradient...

This command creates a sample image filled with the selected gradient. You can select width and height of the image as well as the gradient direction in the dialog window.

Save Gradient as CSS...

The CSS (Cascading Style Sheets) language is used to format the display of HTML and XML files, for instance background color, background gradient, or font size. The "CSS Save" plug-in is a CSS3 linear gradient generator that allows you to save a CSS3 code snippet, containing the gradient data for a given GIMP gradient. This code snippet is a text file: you can copy-paste it to the stylesheet related to your HTML file, to get a gradient background on opening the HTML file in Firefox, Chrome or Safari web navigators. This CSS3 code snippet can also be used as a gradient in SVG files.

Here is an example of a CSS3 code snippet, using the Blue Green gradient:

A CSS snippet created with Save as CSS.

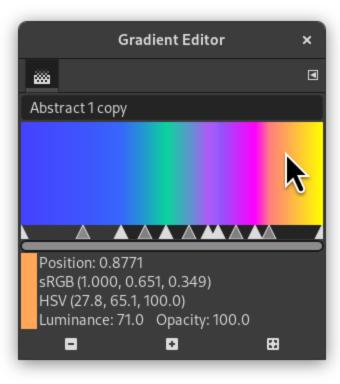
background-image: linear-gradient(top, rgb(0,123,255) 0%, rgb(72,226,255) 56%, rgb(0,255,161) 100%);

3.5.2.1. Tagging

You can use tags to reorganize the gradients display. See Section 3.7, "Tagging".

3.5.3. The Gradient Editor

Figure 15.33. The gradient editor



The Gradient Editor allows you to edit the colors in a gradient. It can only be used on gradients you have created yourself (or on a copy of a system gradient), not on system gradients that come pre-installed with GIMP. This is a sophisticated tool that may take a bit of effort to understand. The concept behind it is that a gradient can be decomposed into a series of adjoining *segments*, with each segment consisting of a smooth transition from the color on the left edge to the color on the right edge. The Gradient Editor allows you to pack together any number of segments, with any colors you want for the left and right edges of each segment, and with several options for the shape of the transition from left to right.

3.5.3.1. How to Activate the Gradient Editor

You can activate the Gradient Editor in several ways:

- by double-clicking on the gradient stripe in the Gradient dialog.
- from the context menu you get by right clicking on the selected gradient name,
- by clicking on the E Edit gradient button in the Gradient Dialog,
- from the Gradient Menu you get by clicking on

 in the Gradient Dialog.

3.5.3.2. Display

Name

This is where you can change under what name the gradient shows up in the list of gradients.

The Gradient Preview Window

Below the name, you see the current result of your work. If you move the mouse pointer on this display, it works somewhat like a color-picker. Information about the pixel under the mouse is shown below the preview and slider area.

Position is a number between 0.000 on the left and 1.000 on the right side of the gradient. Below that the color values in *RGB* and *HSV* mode are shown, followed by the *Luminance* and *Opacity* values.

If you click-n-drag on display, then only position and RGB data are displayed. But they are passed on to the Foreground color in the Toolbox and to the four first gradients of the list (by pressing the **Ctrl** key, the Color is sent to the Background color of the Toolbox).

Range Selection/Control Sliders

Below the gradient display, you see a set of black and white triangles lined up in row which allow you to adjust endpoints and midpoints in the gradient preview. A *segment* is the space between two consecutive *black* triangles. Inside each segment is a white triangle, which is used to "warp" the colors in the segment, in the same way that the middle slider in the Levels tool warps the colors there. You can select a segment by clicking between the two black triangles that define it. It turns from white to blue. You can select a range of segments by **Shift** -clicking on them. The selected range always consists of a set of *consecutive* segments, so if you skip over any when **Shift** -clicking, they will be included automatically. If "Instant update" is checked, the display is updated immediately after any slider movement; if it is unchecked, updates only occur when you release the mouse button.

You can move sliders, segments and selections. If you simply *click-n-drag a slider*, you only move the corresponding transition. By *click-n-drag on a segment* you can move this segment up to the next triangle. By *Shift+click-n-drag on a segment/selection*, you can move this segment/selection and compress/dilate next segments.

Scrollbar

Below the sliders is a scrollbar. This only comes into play if you zoom in using the buttons at the bottom.

Feedback Area

Below, a color swatch shows the color pointed by the mouse cursor. Information about this color and helpful hints or feedback messages may appear here.

Buttons

The button bar at the bottom offers the following functionality:

Zoom Out

Clicking this button shrinks the gradient display horizontally.

700m Ir

Clicking this button expands the gradient display horizontally. You can then use the scrollbar to pan the display left or right.

⊞ Zoom All

Clicking this button resizes the display horizontally so that it fits precisely into the window.

3.5.3.3. The Gradient Editor pop-up Menu

You can access the Gradient Editor menu either by right-clicking on the gradient display, or by choosing the top item in the dialog's tab menu. The menu allows you to edit endpoint's color (set the left and right edge colors for each

segment), blend colors, select a color model and edit segments. This editor works only with custom gradients or a copy of a system gradient.

The following commands can be found in the menu:

Editing endpoint's color

Left/Right color type

This submenu allows you to select the endpoint color from the toolbox foreground and background colors. Whenever you change the foreground or background color, this endpoint color may be changed as well. The alternative is to select a Fixed endpoint color.

The following commands can be found in the menu:

Fixed

Fixed

Foreground Color

Foreground Color

Foreground Color (Transparent)

Foreground Color (Transparent)

Background Color

Background Color

Background Color (Transparent)

Background Color (Transparent)

Left [Right] Endpoint's Color

These options allow you to choose a color for the respective endpoint using a Color Editor.



Note

This command is related to the previous one and becomes inactive if you have selected any other value than Fixed for the corresponding Left [Right] Color Type.

Load Left [Right] Color From

These options give you a number of alternative ways of assigning colors to the endpoints. From the submenu you can choose (assuming we're dealing with the left endpoint):

Left Neighbor's Right Endpoint

This choice will cause the color of the right endpoint of the segment neighboring on the left to be assigned to the left endpoint of the selected range.

Right Endpoint

This choice will cause the color of the right endpoint of the selected range to be assigned to the left endpoint.

FG/BG color

This choice causes GIMP's current foreground or background color, as shown in the Toolbox, to be assigned to the endpoint. Note that changing foreground or background color later will not change the endpoint's color.

RGBA slots

At the bottom of the menu are 10 "memory slots". You can assign colors to them using the "Save" menu option described below. If you choose one of the slots, the color in it will be assigned to the endpoint.

Save Left [Right] Color To

These options cause the color of the endpoint in question to be assigned to the "memory slot" selected from the submenu.

Click and drag colors

You can also click and drag a color from the toolbox FG-BG colors or from a palette

- to an endpoint (a black triangle), to set left [right] colors,
- to the gradient display area, to add a new endpoint with this color on both sides.

Blending and coloring functions for segment

Blending Function for Segment

This option determines the course of the transition from one endpoint of the range (segment or selection) to the other, by fitting the specified type of function to the endpoints and midpoint of the range:

Linear

Default option. Color varies linearly from one endpoint of the range to the other.

Curved

Gradient varies more quickly on ends of the range than on its middle.

Sinusoidal

The opposite of the curved type. Gradients varies more quickly on center of the range than on its ends.

Spherical (increasing)

Gradient varies more quickly on the left of the range than on its right.

Spherical (decreasing)

Gradient varies more quickly on the right than on the left.

Step

Gradient changes from left value to right value in one step without intermediate colors.

Coloring Type for Segment

This option gives you additional control of the type of transition from one endpoint to the other: as a line either in RGB space or in HSV space.

The following commands can be found in the menu:

RGB

RGB

HSV (counter-clockwise hue)

HSV (counter-clockwise hue)

HSV (clockwise hue)

HSV (clockwise hue)

Modifying segments

Flip Segment

This option does a right-to-left flip of the selected range (segment or selection), flipping all colors and endpoint locations.

Replicate Segment

This option splits the selected range (segment or selection) into two parts, each of which is a perfect compressed copy of the original range.

Split Segment at Midpoint

This option splits each segment in the selected range in into two segments, splitting at the location of the white triangle.

Split Seament Uniformly

This option is similar to the previous one, but it splits each segment halfway between the endpoints, instead of at the white triangle.

Delete Segment

This option deletes all segments in the selected range, (segment or selection) replacing them with a single black triangle at the center, and enlarging the segments on both sides to fill the void.

Re-center Segment's midpoint

This option moves the white triangle for each segment in the selected range to a point halfway between the neighboring black triangles.

Re-distribute Handles in Segment

This option causes the black and white triangles in the selected range to be shifted so that the distances from one to the next are all equal.

Blending colors

These options are available only if more than one segment are selected.

Blend Endpoints' Colors

This option causes the colors at interior endpoints in the range to be averaged, so that the transition from each segment to the next is smooth.

Blend Endpoints' Opacity

This option does the same thing as the previous option, but with opacity instead of color.

Edit Active Gradient

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> When enabled, the gradient editor will automatically load the currently active gradient. If it is disabled, the gradient editor will not change when the active gradient changes.



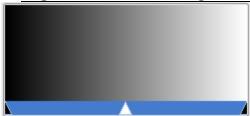
There is no "undo" available within the Gradient Editor, so be careful!

3.5.3.4. Using example for the Gradient Editor

All these options can seem somewhat boring. Here is an example to clear ideas:

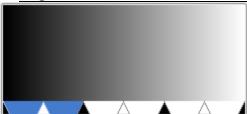
Open the Gradient Dialog. Click 🖰 New Gradient. The Gradient Editor is opened and shows a gradient from black to white.

Figure 15.34. New gradient



2. Right click in this new gradient and select Split Segment Uniformly. If wanted, adjust the number of segments.

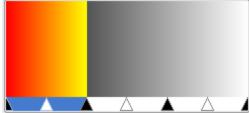
Figure 15.35. Gradient with three segments



Every segment is limited with two black triangular sliders. Click a segment to activate it. By pressing the Shift key, you can select several contiguous segments.

3. In the context menu you get by right-clicking in the gradient, set Left Endpoint Color and Right Endpoint Color for the selected segment or segment group.

Figure 15.36. First segment colored



Red has been chosen for left endpoint and yellow for the right endpoint.

Go on the same way for other segments. Then use the Blending functions for segment to achieve various







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3.6. Palettes Dialog



3. Image-content Related Dialogs



3.6. Palettes Dialog

A *palette* is a set of discrete colors, in no particular order. See the <u>Palettes</u> section for basic information on palettes and how they can be created and used.

The "Palettes" dialog is used to select a palette, by clicking on it in a list or grid view. A few dozen more or less randomly chosen palettes are supplied with GIMP, and you can easily add new palettes of your own. The "Palettes" dialog also give you access to several operations for creating new palettes or manipulating the ones that already exist.



Note

The "Palettes" dialog is not the same thing as the <u>Index Palette dialog</u>, which is used to manipulate the colormaps of indexed images.

3.6.1. Activating the Dialog

This dialog is a dockable dialog; see the section <u>Section 2.3, "Dialogs and Docking"</u> for help on manipulating it. You can access it:

- from the main menu: Windows → Dockable Dialogs → Palettes;
- from the Tab menu in any dockable dialog by clicking the <u>tab menu button</u> and selecting Add Tab → Palettes.

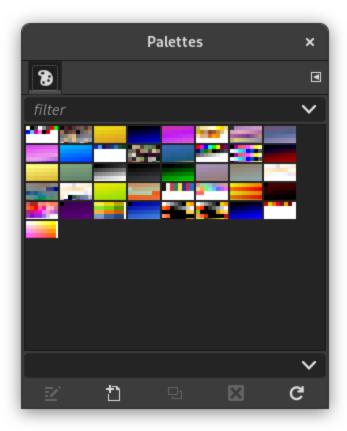
3.6.2. Using the Palettes dialog

Clicking on a palette in the dialog selects this palette and brings up the <u>Palette Editor</u>, which allows you to set GIMP's foreground or background colors by clicking on colors in the palette display. You can also use the arrow keys to select a palette.

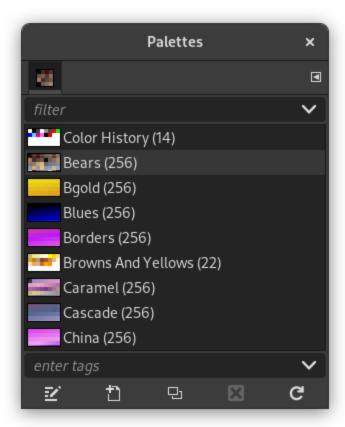
Double-clicking on a palette *name* (in List View mode) lets you to edit the name. Note that you are only allowed to change the names of palettes that you have added yourself, not those that are supplied with GIMP. If you edit a name that you are not allowed to change, it will revert back to its previous value as soon as you hit return or move the pointer focus elsewhere.

Grid/List modes

Figure 15.37. The "Palettes" dialog



Grid View



List View

In the Tab menu, you can choose between View as Grid and View as List. In Grid mode, the palettes are laid out in a spectacular rectangular array, making it easy to see many at once and find the one you are looking for. In List mode (the default), the palettes are lined up in a list, with the names beside them.

The option Preview Size allows you to adapt the size of color cell previews to your liking.

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Tagging

You can use tags to reorganize the palettes display. See Section 3.7, "Tagging".

The buttons of the Palettes Dialog

The button bar at the bottom offers the following functionality:

Edit this palette

This button brings up the Section 3.6.4, "Palette Editor".

The Create a new palette

For more information on this button please refer to New Palette.

☐ Duplicate this palette

For more information on this button please refer to **Duplicate Palette**.

Delete this palette

For more information on this button please refer to <u>Delete Palette</u>.

C Refresh palettes

For more information on this button please refer to Refresh Palettes.

3.6.3. The "Palettes" context menu

The "Palettes" context menu can be accessed by right-clicking in the Palettes dialog, or by choosing the top item from the dialog Tab menu ().



Note

Some of the listed menu entries are installation-dependent, which need version 3 of the <u>Python interpreter</u> to be installed for GIMP 3.0. This includes: <u>Offset Palette...</u>, <u>Palette to Gradient</u>, <u>Palette to Repeating</u> Gradient and Sort Palette....

Edit Palette...

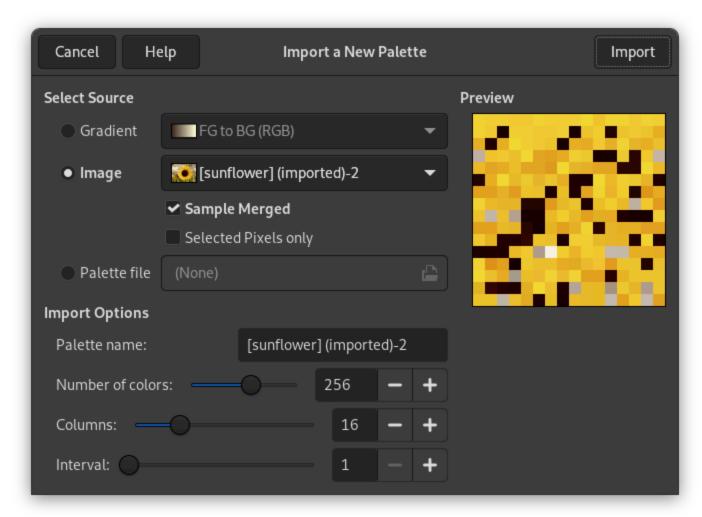
"Edit Palette" is an alternative way of activating the <u>Palette Editor</u>: it can also be activated by double-clicking on a palette in the Palettes dialog, or by pressing the "Edit Palette" button at the bottom of the dialog.

New Palette

"New Palette" creates a new, untitled palette, initially containing no color entries, and pops up the Palette Editor so that you can add colors to the palette. The result will automatically be saved in your personal palettes folder when you quit GIMP, so it will be available from the Palettes dialog in future sessions.

Import Palette...

Figure 15.38. The Import Palette dialog



"Import Palette" allows you to create a new palette from the colors in a gradient, an image or a palette file. Choosing it brings up the "Import Palette" dialog, which gives you the following options:

Select Source

You can import a palette either from any of GIMP's gradients (choosing one from the adjoining menu), or from any of the currently open images (chosen from the adjoining menu).

Two options concerning image as source, available for RGB images only:

- Sample merged: If you enable this option, sampling is not calculated only from the values of the active layer, but from all visible layers.

 For more information, see the Glossary entry.
- Selected pixels only: As the name says, pixels are picked from the selected area only, in the active layer or all visible layers according to the status of the previous option.

You can also import palettes from GIMP's native .gpl format, or the following external palette formats.

- Microsoft RIFF palette (.riff)
- Cascading Style Sheets palette (.css)
- SwatchBooker palette (.sbz)
- Adobe Color palette (.aco)
- Adobe Color Book (.acb)
- Adobe Swatch Exchange palette (.ase)
- Photoshop binary color palette (.act)
- Paint Shop Pro color palette (.psp)

Palette name

Enter a name for the new palette. If the name you choose is already used by an existing palette, a unique name will be formed by appending a number (e. g., "#1").

Number of colors

Here you specify the number of colors in the palette. The default is 256, chosen for three reasons: (1) every gradient contains 256 distinct colors; (2) GIF files can use a maximum of 256 colors; (3) GIMP indexed images can contain a maximum of 256 distinct colors. You can use any number you like here, though: GIMP will try to create a palette by spacing the specified number of colors even across the color range of the gradient or image.

Columns

Here you specify the number of columns for the palette. This only affects the way the palette is displayed, and has no effect on the way the palette is used.

Interval

Even setting "Number of colors" to maximum, the number of colors can't exceed 10000 in the palette. RGB images have much more colors. Interval should allow to group similar colors around an average and so get a better palette. This problem doesn't exist with 256 colors indexed images: Interval to 1 allows picking 256 colors (this option is disabled with more than 256 colors indexed palettes too).

The imported palette will be added to the Palettes dialog, and automatically saved in your personal palettes folder when you guit GIMP, so it will be available in future sessions.

Duplicate Palette

Duplicate Palette creates a new palette by copying the palette that is currently selected, and brings up a Palette Editor so that you can alter the palette. The result will automatically be saved in your personal palettes folder when you quit GIMP, so it will be available from the Palettes dialog in future sessions.

Merge Palettes...

Currently this operation is not implemented, and the menu entry will always be disabled.

Copy Palette Location

This command allows you to copy the palette file location to the clipboard. You can then paste it in a text editor.

Show in File Manager

Show in File Manager opens the location of the palette file in the default File Manager on your system.

Delete Palette

Delete Palette removes the palette from the "Palettes "dialog, and deletes the disk file in which it is stored. Before it acts, it asks you confirm that you really want to do these things. Note that you cannot remove any of the palettes that are supplied with GIMP, only palettes you have added yourself.

Refresh Palettes

Refresh Palettes rescans all of the folders in your palette search path, and adds any newly discovered palettes to the list in the Palettes dialog. This may be useful if you obtain palette files from some external source, copy them into one of your palettes folders, and want to make them available during the current session.

Export as

The Export as submenu gives several choices to export the current palette in external formats. At this time, exporting to the following formats is supported: CSS Stylesheet, Java map, PHP dictionary, Python dictionary, and Text file. Each of these will open a dialog where you can enter a filename and choose a folder where the exported file will be stored.

Offset Palette...

This command opens a dialog window.

It takes the last color of the palette and moves it to the beginning. In the dialog window, the Offset parameter defines how many times this action will be performed.

If you set a negative Offset, colors are moved from the first position to the end of the colors list.

Figure 15.39. "Offset Palette" examples



From top to bottom: original palette, Offset = 1, Offset = 2.

Palette to Gradient

With this command, all the colors of the palette are used to form the current gradient which is saved in the Gradient Dialog. The created gradient is build with segments just as much as the number of colors on the given palette.

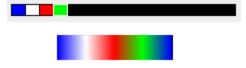
Palette to Repeating Gradient

This command creates a repeating gradient, using all the colors of the palette. This gradient appears in the Gradient Dialog and becomes the current gradient. The gradient is created with segments one more than the

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number of colors on the given palette. The left side color at the leftmost segment will be the same color on the right side at the rightmost segment.

Figure 15.40. "Palette to repeating gradient" examples



Top: palette. Bottom: the gradient created with the command.

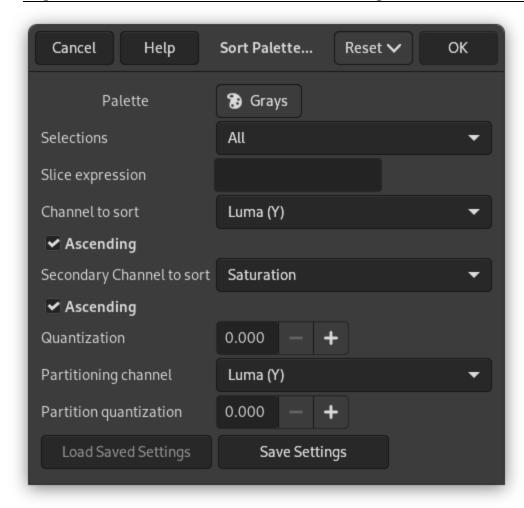
Sort Palette...

This command opens a dialog window which allows you to sort the colors of the palette according to certain criteria. If the palette is read only a new palette will be created that is sorted based on your settings.

Another way of sorting a palette is by using the sorting options of the Rearrange Colormap dialog.

Several settings of this dialog are not well understood. We would welcome contributions from anyone that knows how to improve this documentation.

Figure 15.41. The "Sort Palette" dialog

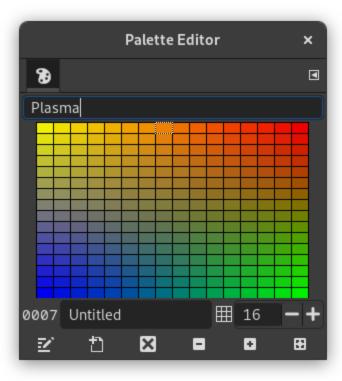


- Selections: This option determines how the palette is going to be sorted. How to use this has not been well documented by its original author. We advise to leave it at the default All.
- Slice expression: This option affects how the palette is sorted when Slice/Array was chosen above in Selections. Documentation taken from the code:
 - Leaving this empty, or entering: selects all items.
 - :4, or :4 makes a 4-row selection out of all colors (length auto-determined).
 - :1,4 selects the first 4 colors.

- :,4 selects rows of 4 colors (number of rows auto-determined).
- :4,4 selects 4 rows of 4 colors.
- 4: selects a single row of all colors after 4, inclusive.
- 4:,4 selects rows of 4 colors, starting at 4 (number of rows auto-determined).
- 4:4,4 selects 4 rows of 4 colors (16 colors total), beginning at index 4.
- 4 is illegal (ambiguous).
- Channel to sort: This option determines based on what type of color channel the sorting will happen.
- Ascending: When enabled, the sorting is ascending. When disabled, the sorting is descending.
- Secondary Channel to sort: This option determines the secondary color channel for sorting in case the first channel sort returns equal values.
- Ascending: When enabled, the sorting is ascending. When disabled, the sorting is descending.
- Quantization: Undocumented for now.
- Partitioning channel: This option is also used to determine how to sort.
- Partitioning quantization: This option is used in conjunction with the previous one.

3.6.4. Palette Editor

Figure 15.42. The Palette Editor



The Palette Editor is used mainly for two purposes: first, for setting GIMP's foreground or background colors (as shown in the Color Area of the Toolbox) to selected colors from the palette; second, for modifying the palette. You can activate the Palette Editor for any palette in the Palettes dialog, but you can only modify palettes that you have created yourself, not the palettes that are supplied when you install GIMP. (You can, however, duplicate any palette and then edit the newly created copy.) If you modify a palette, the results of your work will automatically be saved when you exit from GIMP.

3.6.4.1. How to Activate the Palette Editor

The Palette Editor is only accessible from the Palettes dialog: you can activate it by double-clicking on a palette, or by pressing the ****** "Edit Palette" button at the bottom, or by choosing "Edit Palette" from the "Palettes" Menu. The Palette Editor is a dockable dialog; see the section on <u>Dialogs and Docking</u> for help on manipulating it.

3.6.4.2. Using the Palette Editor

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If you click on a color box in the palette display, GIMP's foreground color will be set to the selected color: you can see this in the Color Area of the Toolbox. If you hold down the **Ctrl** key while clicking, GIMP's background color will be set to the selected color.

If the palette is a custom palette, double-clicking on a color not only sets the foreground, it also brings up a color editor that allows you to modify the selected palette entry.

Right-clicking in the palette display area brings up the Palette Editor menu. It's functions are mainly the same as those of the buttons at the bottom of the dialog.

Below the palette display area, at the left, appears a text entry area that shows the name of the selected color (or "Untitled" if it does not have one). This information has no functional significance, and is present only to serve you as a memory aid.

To the right of the name entry is a spinbutton that allows you to set the number of columns used to display the palette. This only affects the display, not how the palette works. If the value is set to 0, a default will be used.

At the bottom of the dialog are a set of buttons, which mostly match the entries in the Palette Editor menu, accessible by right-clicking a color in the palette display area. Here are the buttons:

Edit Color

For more information on this button please refer to below.

New Color from FG

For more information on this button please refer to below.

➤ Delete Color

For more information on this button please refer to below.

Zoom Out

For more information on this button please refer to below.

Zoom In

For more information on this button please refer to below.

Zoom All

For more information on this button please refer to below.

3.6.5. The Palette Editor context menu

The Palette Editor Menu can be accessed by right-clicking on the palette display in the Palette Editor, or by choosing the top entry from the dialog Tab menu. The operations in it can also be executed using the buttons at the bottom of the Palette Editor dialog.

Edit Color

"Edit Color" brings up a color editor that allows you to modify the color of the selected palette entry. If the palette is one that you are not allowed to edit (that is, one supplied by GIMP when it is installed), then the menu entry will be disabled.

New Color from FG; New Color from BG

These commands each create a new palette entry, using either GIMP's current foreground color (as shown in the Color Area of the Toolbox), or the current background color.

Delete Color

"Delete Color" removes the selected color entry from the palette. If the palette is one that you are not allowed to edit, then the menu entry will be disabled.

Zoom Out

"Zoom Out" reduces the vertical scale of the entries in the palette display.

Zoom In

"Zoom In" increases the vertical scale of the entries in the palette display.

Zoom All

"Zoom All" adjusts the vertical size of the entries in the palette display so that the entire palette fits into the display area.

Edit Active Palette

When this option is checked (default), you can edit another palette by clicking on it in the "Palettes" dialog.







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3.5. Gradients Dialog

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3.7. Tagging

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3.7. Tagging



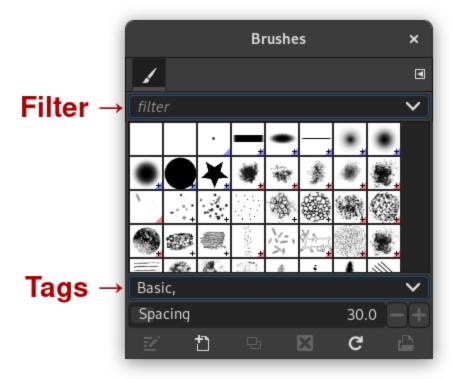
3. Image-content Related Dialogs



3.7. Tagging

In Brushes, Gradients, Patterns and Palettes dialogs and some other dockable dialogs, you can define tags and then, you can reorganize items according to chosen tags only. Tagging is divided in two parts:

Figure 15.43. Tagging



- A "Filter" field at the top where you can enter or select a tag previously defined. Only the resources (Brushes, gradients, patterns, palettes, etc.) that have the specified tag, will be displayed.
 - You can enter several tags, separated with commas. In which case only the resources that have all these tags defined, will be shown.
 - Selecting a tag with the mouse works differently: only a single tag can be active at a time. If you want to select another tag, you first have to click the active tag to unselect that one, before selecting a different tag.
- "Enter tag" field, below the list of resources can be used to add tags to the selected resource. The tags belonging to the current brush, gradient, pattern, palette, etc. are displayed.
 - You can add more tags to the current resource by clicking on one of the defined tags in the pop-up list of the field; or you can create your own tag for this item by typing its name in the field. The new tag will then appear in the tag list.

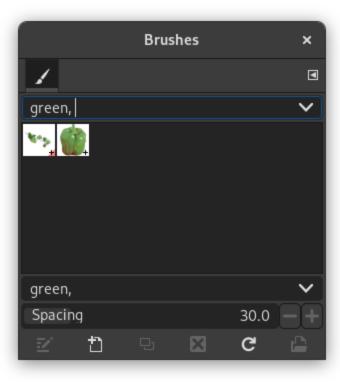


Note

The Fonts dialog also has Filter and Enter tag fields. But GIMP doesn't yet automatically generate any tags from fonts metadata, nor does it save the tags you add to fonts.

Figure 15.44. Example

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In this example, we defined a "green" tag for the Pepper and Vine brushes. Then, we entered "green" in the Filter input field and so, only brushes with the green tag are displayed.



Tip

To give several <u>brush</u>es the same tag at once, display brushes in List Mode, and use **Ctrl** +Mouse Left Button on the brushes you want to select.

You can delete tags: select a brush, then select a tag in the "Enter tag" field and press the **Delete** key. When this tag has been removed from all brushes, it disappears from the list.



3.6. Palettes Dialog





3.8. Fonts Dialog

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3.8. Fonts Dialog

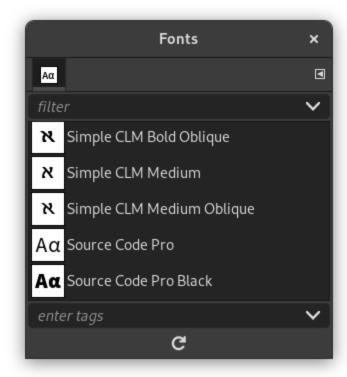


3. Image-content Related Dialogs



3.8. Fonts Dialog

Figure 15.45. The Fonts dialog



The "Fonts" dialog is used for selecting fonts for the <u>Text tool</u>. It also allows you to refresh the list of available fonts, if you add new ones to your system while GIMP is running.

3.8.1. Activating the Dialog

This dialog is a dockable dialog; see the section <u>Section 2.3, "Dialogs and Docking"</u> for help on manipulating it. You can access it:

- from the main menu: Windows → Dockable Dialogs → Fonts;
- from the Tab menu in any dockable dialog by clicking the <u>tab menu button</u> and selecting Add Tab → Fonts,
- from the Tool Options for the Text tool. If you click on the "Font" button, a Font-selector pops up. In the lower right corner is a button that, if pressed, brings up the "Fonts" dialog.

In the Windows menu, there is a list of <u>detached windows</u> which exists only if at least one dialog remains open. In this case, you can raise the "Fonts" dialog from the main menu: Windows \rightarrow Fonts.

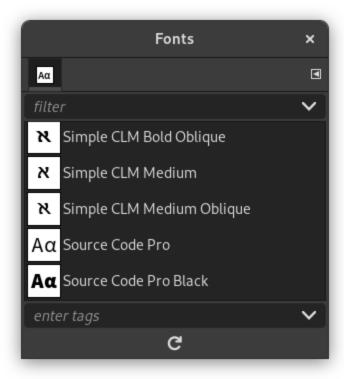
3.8.2. Using the Fonts dialog

The most basic thing you can do is to select a font by clicking on it: this font will then be used by the Text tool. If instead of clicking and releasing, you hold down the left mouse button with the pointer positioned over the font example ("Aa"), a window showing a larger text example will pop up ("Pack my box with five dozen liquor jugs").

Figure 15.46. The Fonts dialog



Dialog in Grid View



Dialog in List View



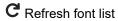
In the Tab menu for the Fonts dialog, you can choose between View as Grid and View as List. In Grid mode, the fonts are laid out in a rectangular array. In List mode, they are lined up vertically, with each row showing an

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example of the appearance of the font ("Aa"), followed by the name of the font.

Buttons

The button bar at the bottom offers the following functionality:



Pressing this button at the bottom of the dialog causes the system font list to be rescanned. This may be useful if you add new fonts while GIMP is running, and want to make them accessible for the Text tool. You can also cause the font list to be rescanned by right-clicking in the font display, and selecting "Rescan Font List" from the menu that pops up (it is actually the only option in the menu).



Tip

You can change the size of the font previews in the dialog using the "Preview Size" submenu of the dialog's Tab menu.



3.7. Tagging







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4. Image Management Related Dialogs







4. Image Management Related Dialogs

4.1. Buffers Dialog

Figure 15.47. The Buffers dialog (as a list)



Buffers are a kind of temporary storage for image data, created when you cut or copy part of a drawable (a layer, layer mask, etc.). The following commands are available from the Edit menu to save an image to a buffer:

Cut Named...

Edit \rightarrow Buffer \rightarrow Cut Named... This command cuts the selected part from the current drawable (usually a layer) and places it in a buffer. If there is no selection the whole drawable will be used. You will be asked to give the buffer a name. The image will be removed from the selection after this is done.

Copy Named...

Edit \rightarrow Buffer \rightarrow Copy Named... This command copies the selected part from the current drawable (usually a layer) and places it in a buffer. If there is no selection the whole drawable will be used. You will be asked to give the buffer a name.

Copy Visible Named...

Edit \rightarrow Buffer \rightarrow Copy Visible Named... This command copies the selected part from all the visible drawables and places it in a buffer. If there is no selection the whole image will be used. You will be asked to give the buffer a name.

Paste Named...

Edit \rightarrow Buffer \rightarrow Paste Named... This menu command opens the Buffers Dialog. To actually paste a buffer, choose one of the buttons from this dialog, or the context menu. Both of which will be explained below.

The "Buffers" dialog shows you the contents of all existing named buffers, and allows you to operate on them in several ways. It also shows you, at the top, the contents of the Global Buffer (the contents of the clipboard). This

Global Buffer is merely a display: you can't do anything with it. There is no hard limit on the number of named buffers you can create, except that it will consume a share of your available computer memory.



Caution

Named buffers are not saved across sessions: they will be gone when you close GIMP. The only way to save their contents is to paste them into images.

4.1.1. Activating the Dialog

This dialog is a dockable dialog; see the section <u>Section 2.3, "Dialogs and Docking"</u> for help on manipulating it. You can access it:

- from the main menu: Edit → Buffer → Paste Named...;
- from the main menu: Windows → Dockable Dialogs → Buffers;
- from the Tab menu in any dockable dialog by clicking the <u>tab menu button</u> and selecting Add Tab → Buffers.

In the Windows menu, there is a list of <u>detached windows</u> which exists only if at least one dialog remains open. In this case, you can raise the "Buffers" dialog from the main menu: Windows \rightarrow Buffers.

4.1.2. Using the Buffers dialog

Clicking on a buffer in the display area makes it the active buffer, i.e., the one that will be used for paste commands executed from the Buffers context menu, or the buttons at the bottom of the dialog. Double-clicking on a buffer causes its contents to be pasted to the active image as a floating selection; this is a quick way of executing the "Paste Buffer" command.

At the bottom of the dialog are five buttons. The operations they perform can also be accessed from the Buffers Menu that you get by right clicking on the active buffer.





In the Tab menu for the "Buffers" dialog, you can choose between View as Grid and View as List. In Grid mode, the buffers are laid out in a rectangular array. In List mode, they are lined up vertically, with each row showing a thumbnail of the contents of the buffer, its name, and its pixel dimensions.



You can change the size of the buffer previews in the dialog using the "Preview Size" submenu of the dialog's Tab menu.

4.1.2.1. Buttons at the bottom

The button bar at the bottom offers the following functionality:

Paste Buffer , Paste Buffer In Place

This command pastes the contents of the selected buffer into the active image, as a floating selection. The only difference between this and the ordinary Paste command is that it uses the selected buffer rather than the global clipboard <a href="buffer-bu

With the | **Shift** | key pressed, it pastes the buffer at its original location.

Paste Buffer Into The Selection , Paste Buffer Into The Selection In Place

This command pastes the contents of the selected buffer into the active image's selection, as a floating selection. The only difference between this and the ordinary Paste Into Selection command is that it uses the selected buffer rather than the global clipboard buffer.

With the **Shift** key pressed, it pastes the buffer into the active selection at its original location.

🗗 Paste Buffer as New Layer , Paste Buffer as New Layer in Place

This command creates a new layer in the active image out of the contents of the selected buffer. The only difference between this and the ordinary Paste as New Image command is that it uses the selected buffer rather than the content of the global clipboard buffer.

With the **Shift** key pressed, it creates the layer at the original location of the buffer.

Paste Buffer as New Image

This command creates a new single-layer image out of the contents of the selected buffer. The only difference between this and the ordinary Paste as New Image command is that it uses the selected buffer rather than the content of the global clipboard buffer.

➤ Delete Buffer

This command deletes the selected named buffer, no questions asked. You cannot delete the Global Buffer.

4.1.2.2. Buffers Dialog Context menu

These commands are the same as available through the buttons at the bottom of the dialog and are explained there.







3.8. Fonts Dialog



4.2. Images Dialog

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4.2. Images Dialog

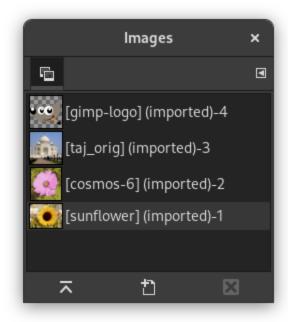


4. Image Management Related Dialogs



4.2. Images Dialog

Figure 15.49. The Images dialog



The "Images" Dialog displays the list of open images on your screen; each of them is represented with a thumbnail. This dialog is useful when you have many overlapping images on your screen: thus, you can raise the wanted image to foreground.

4.2.1. Activating the Dialog

This dialog is a dockable dialog; see the section <u>Section 2.3, "Dialogs and Docking"</u> for help on manipulating it. You can access it:

- from the main menu: Windows → Dockable Dialogs → Images;
- from the Tab menu in any dockable dialog by clicking the <u>tab menu button</u> \blacksquare and selecting Add Tab \rightarrow Images.

In the Windows menu, there is a list of <u>detached windows</u> which exists only if at least one dialog remains open. In this case, you can raise the "Images" dialog from the main menu: Windows \rightarrow Images.

4.2.2. Using the Images dialog

In multi-window mode, at the top of the dialog, a drop-list of open images appears if the "Show Image Selection" option is checked in the Tab Menu.

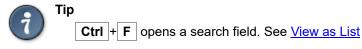
At center, open images appear, as a list or a grid, according to the selected mode. The current image is highlighted in list mode, outlined in grid mode. With a double click on an image name, you raise this image to the foreground of your screen. With a simple click you select this image so that the buttons of the dialog can act on it.

View as List, View as Grid, Preview Size

In the Tab menu for the "Images" dialog, you can choose between View as List and View as Grid. In List mode, they are lined up vertically, with each row showing a thumbnail of the contents of the image, its name, and its pixel

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dimensions. In Grid mode, the images are laid out in a rectangular array.



You can change the size of the image previews in the dialog using the Preview Size submenu of the dialog's Tab

Buttons

The button bar at the bottom offers the following functionality:

Raise this image's displays

The selected image appears at the foreground of your screen. If this image has another view, this view also is raised but remains behind the original. The same option in the pop-up menu, that you get by right-clicking, is called "Raise views"

🗂 Create a new display for this image

Duplicates the image window (not the image) of the selected image.

X Delete

This command works only on an image which is loaded without any window. Though images can be opened by the New Window command, if the image has been already loaded without window by a primitive procedure command (such as gimp-image-new, file-png-load, etc.), it can not be unloaded even if its windows are closed to the last. Then use this command to close it.







4. Image Management Related Dialogs



4.3. Document History Dialog

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4.3. Document History Dialog

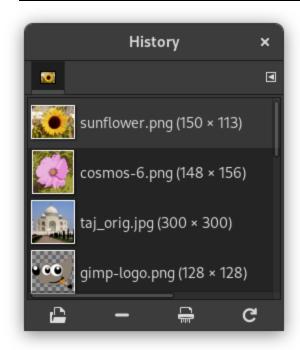


4. Image Management Related Dialogs



4.3. Document History Dialog

Figure 15.50. Document History dialog



The History Dialog displays the list of the documents you have opened in previous sessions. It is more complete than the list you get with the "Open Recent" command.

4.3.1. Activating the Dialog

This dialog is a dockable dialog; see the section <u>Section 2.3, "Dialogs and Docking"</u> for help on manipulating it. You can access it:

- From the main menu: Windows \rightarrow Dockable Dialogs \rightarrow Document History.
- From the main menu: File → Open Recent → Document History.

4.3.2. Using the Document History dialog

The scroll bar allows you to browse all images you have opened before.

In the Tab menu for the "Document History" dialog, you can choose between View as Grid and View as List. In Grid mode, the documents are laid out in a rectangular array. In List mode, they are lined up vertically, with each row showing a thumbnail of the contents of the image, its name, and its pixel dimensions.



Use the *Open the selected entry* button or Open Image command of the dialog's context menu, to open the image you have selected. With the **Shift** key pressed, it raises an image hidden behind others. With the **Ctrl** key pressed,

it opens the Open Image dialog.

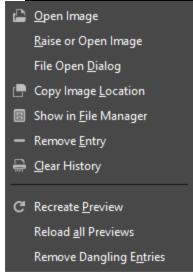
Use the *Remove the selected entry* — button or Remove Entry command of the dialog's context menu, to remove an image from the History dialog. The image is removed from the recently open images list also. But the image itself is not deleted.

Use the *Clear the entire file history* button or Clear History command of the dialog's context menu, to remove all the files from the history.

Use the *Recreate Preview* **C** button or Recreate Preview command of the dialog's context menu, to update preview in case of change. With **Shift** key pressed, it acts on all previews. With **Ctrl** key pressed, previews that correspond to files that can't be found out, are deleted.

4.3.2.1. Document History Context Menu

Figure 15.51. Document History Context Menu



Overview

You can get the document history context menu by right clicking on a file in the document history dialog, or by clicking the <u>tab menu button</u> and opening the Documents Menu submenu. Several of the operations are also available through buttons at the bottom of the dialog. Those operations are documented above. The remaining ones are listed below.

Copy Image Location

Copy Image Location allows you to copy the path of the selected image to the clipboard.

Show in File Manager

Show in File Manager opens the location of the image in the default File Manager on your system.



4.2. Images Dialog







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4.4. Templates Dialog

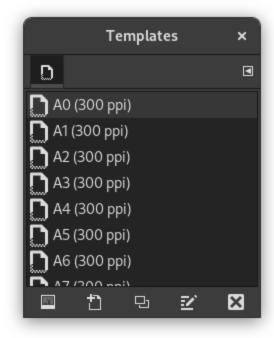


4. Image Management Related Dialogs



4.4. Templates Dialog

Figure 15.52. The Templates dialog



Templates are pre-defined image settings that you can use to quickly create a new image with your preferred dimensions, resolution etc. GIMP comes with a lot of templates installed, but you can also create your own. When you create a new image, you can access the list of existing templates to choose one to be used as base for your new image. The "Templates" dialog allows you to manage these templates.

4.4.1. Activating the Dialog

This dialog is a dockable dialog; see the section <u>Section 2.3, "Dialogs and Docking"</u> for help on manipulating it. You can access it:

- from the main menu: Windows \rightarrow Dockable Dialogs \rightarrow Templates.
- from the Tab menu in any dockable dialog by clicking the <u>tab menu button</u> and selecting Add Tab → Templates.

4.4.2. Using the Templates dialog

You select a template by clicking on its icon. Right clicking reveals a local menu that offers the same functions as the buttons

4.4.2.1. Grid/List modes

In the Tab menu for the "Templates" dialog, you can choose between View as Grid and View as List. In Grid mode, templates are laid out in a rectangular array of identical icons (unless you gave them a particular icon, as we will see

later). Only the name of the selected template is displayed. In List mode, they are lined up vertically; icons are identical too; all names are displayed.

In this Tab menu, the Preview Size option allows you to change the size of thumbnails.



Tip

Ctrl + F in a list view opens a search field. See View as List

4.4.2.2. Buttons at the bottom

The button bar at the bottom offers the following functionality:

Create a new image from the selected template

Clicking on this button creates a new image with the settings defined in the selected template.

The Create a new template

Clicking on this button opens the New template dialog, identical to the Edit Template dialog, that we will see below.

☐ Duplicate the selected template

Clicking on this button opens the Edit Template dialog that is documented next.

E Edit the selected template

Clicking on this button opens the <u>Edit Template</u> dialog where you can adjust the image related settings for the selected template.

Delete the selected template

This deletes the selected template after asking for confirmation.

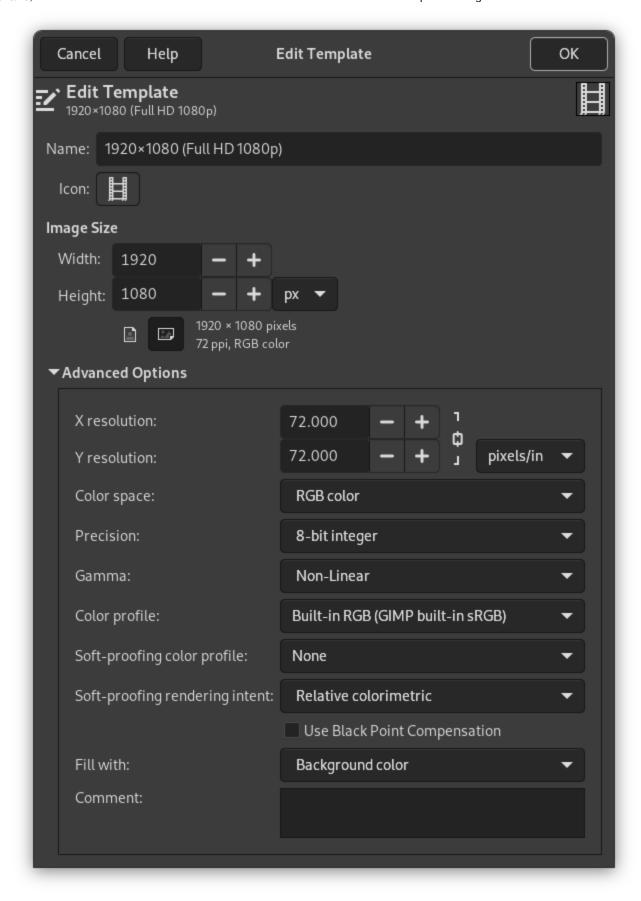


Tip

Every template is stored in a templaterc file in your personal GIMP directory. If you want to restore some deleted templates, you can copy or append template entries to your file from the master templaterc file in the etc/gimp/3.0 directory of GIMP's system folder.

4.4.3. Edit Template

Figure 15.53. The Edit Template dialog



This dialog allows you to change the settings of the selected template.

You can access this dialog by clicking on the Edit Template button at the bottom of the <u>Templates Dialog</u>

Options

Name

In this text box, you can modify the name of the template.

Icon

By clicking on this icon, you can select a different icon that will be shown in front of the name of this template. The icon can be picked from a list of pre-defined icons, from a file on your computer, or by pasting from the clipboard.

Image size

Here you set the Width and Height of the new image. The default units are pixels, but you can choose a different unit if you prefer, using the adjoining menu. If you do, note that the resulting pixel size is determined by the X and Y resolution (which you can change in the Advanced Options), and by setting "Dot for Dot" in the View menu.

Portrait/Landscape buttons

These buttons toggle between Portrait and Landscape mode. Their effect is to exchange the values for Width and Height. If the X and Y resolutions are different (in Advanced Options), then these values are also exchanged. On the right, image size, image resolution and color space are displayed.

Advanced Options

The advanced options let you change several additional image settings.

X and Y resolution

The values in the X resolution and Y resolution fields relate mainly to printing: they do not affect the size of the image in pixels, but they may determine its physical size when it is printed. The X and Y resolution values can determine how pixels are translated into other measurement units, such as millimeters or inches.



Tip

If you want to display the image on the screen at the correct dimensions, select View \rightarrow Dot for Dot Set the zoom factor to 100% to see the image at its true screen size. The calibration of the screen size is normally done when GIMP is installed, but if the image does not display at the correct size, you may have to adjust the screen parameters in GIMP. You can do this in the Preferences dialog.

Color space

You can create the new image in different color modes, as either an RGB image or a grayscale image.

RGB color

The image is created in the Red, Green, Blue color system, which is the one used by your monitor or your television screen.

Grayscale

The image is created in black and white, with various shades of gray. Aside from your artistic interests, this type of image may be necessary for some plug-ins. Nevertheless, GIMP allows you to change an RGB image into-draws-shades of grayscale, if you would like.

You cannot create an indexed image directly with this menu, but of course you can always convert the image to indexed mode after it has been created. To do that, use the $Image \rightarrow Mode \rightarrow Indexed$ command.

Precision

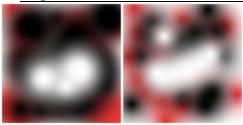
This setting lets you define the encoding used to store pixel information. For more details, please see the <u>Image Encoding</u> section.

Five options are available:

- 8-bit integer
- 16-bit integer
- 32-bit integer
- 16-bit floating point
- 32-bit floating point

If you wonder what the difference is between integer and floating point (in the graphics area): If you have an image with 16-bit integer precision per channel, then you have 65,536 shades of different red, green and blue color tones – all of them equally stepped to each other (equal color distance). If you have it in floating point, then there are no equal-wide steps – so you can distribute the possible color values over selected ranges. For example: if you know that you have a very dark image with many shades of dark red color tones then you would benefit from floating point because you can decrease the importance of the brighter color tones and get most color detail out of only the darker reds.

Figure 15.54. Precision example



Left image is 8-bit, right is 32-bit. You can see that there are much more available colors between color transitions on the right image.

Gamma

Here you can choose the <u>channel encoding</u> for your image. Choices are Non-linear and Linear light. For 8-bit integer precision the default is Non-linear, and for 32-bit floating point precision it is Linear light. For more information see <u>which precision options should you choose</u>.

Color profile

Here you can choose a color profile to be used for your image. The default is GIMP's standard color profile based on Color space, Precision, and Gamma. If you prefer to use a different color profile you can select an ICC color profile file from a location on your computer by choosing Select color profile from disk....

Soft-proofing color profile

You can attach a CMYK color profile to the image with this option. This profile will be used to create a soft-proofed display of the image when the Proof Colors option is enabled in the View menu. As with the Color Profile, if you prefer to use a different color profile you can select an ICC color profile file from a location on your computer by choosing Select color profile from disk....

Soft-proofing rendering intent

This option lets you select the rendering intent that will be used to convert the colors from the soft-proofed image to your display device when View → Color Management → Proof Colors is enabled. The four intents are "Perceptual", "Relative colorimetric", "Saturation" and "Absolute colorimetric". See <u>Section 6.4, "Color Management"</u> and <u>Section 6.8, ""Color Management"</u> Submenu" for more information.

Use Black Point Compensation

When enabled, the BPC algorithm attempts to adjust the display of darker areas in the image when the Proof Colors option is enabled in the View menu.

Fill with

Here, you specify the background color that is used for your new image. It is certainly possible to change the background of an image later, too. You can find more information about doing that in the <u>Layers Dialog</u>. There are several choices:

- Fill the image with the current Foreground color, shown in the Toolbox.
 - Note that you can change the foreground color while the "New Image" dialog window is open.
- Fill the image with the current Background color, shown in the Toolbox. (You can change the background color too, while the dialog window is open.)
- Fill the image with Middle Gray (CIELAB). This will create a layer with a gray color that is 50% of perceptual lightness in the selected <u>color mode</u>.
- Fill the image with White.
- Fill the image with Transparency. If you choose this option, the image is created with an <u>alpha channel</u> and the background is transparent. The transparent parts of the image are then displayed with a checkered pattern, to indicate the transparency.
- Fill the image with a Pattern. If you choose this option, the image is filled with the currently active pattern (which you can change while this dialog is open).

Comment

You can write a descriptive comment here. The text is attached to the image as a <u>parasite</u>, and is saved with the image by some file formats (PNG, JPEG, GIF).



Note

You can view and edit this comment in the <u>Image Properties</u> dialog.







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4.3. Document History Dialog

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5. File related Dialogs

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5. File related Dialogs







5. File related Dialogs

The following pages document the dialogs for opening, saving and exporting your images.

5.1. Open Image

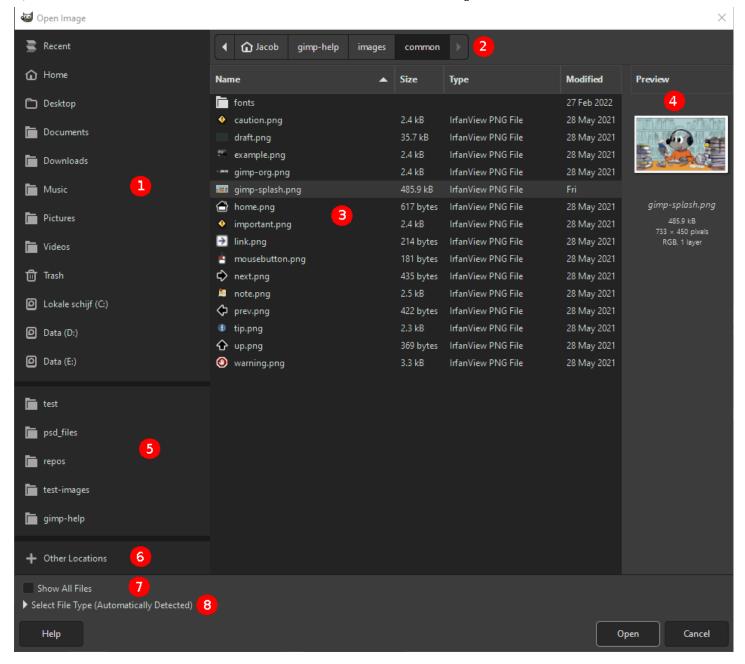
The Open Image dialog lets you select an image to be loaded from your hard-drive or an external device.

5.1.1. Activating the Dialog

- You can access the Open Image dialog from the menu through: File \rightarrow Open.... You can also open this dialog by using the keyboard shortcut $\boxed{\mathbf{Ctrl}} + \boxed{\mathbf{0}}$.

5.1.2. File browsing

Figure 15.55. The Open Image Dialog

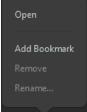


This file selection dialog should look familiar when you have worked with files before. Note that depending on your Operating System there may be some differences in the way this dialog looks. We will explain the details of this dialog based on the numbers in the red circles.

1. This area gives you access to your main folders and your storage devices. The first time you open this dialog after starting GIMP, Recent will be selected here. This is a special folder that shows the images (see 3) that you have recently opened in GIMP.

Besides the Recent folder, you can find here your Home folder, folders to you documents, pictures and other special locations, as well as your hard drives, external drives and network shares. Left clicking on one of these folders will select that one as the current folder and update the list of images in the image list area (3).

By right-clicking on a folder in this list, a context menu will open. Not all commands will always be available, or enabled. The same context menu is also shown in the bookmark folders list, see (5).



The folder and bookmark list context menu

Open

This opens the contents of the selected folder in the image list window (3).

Add Bookmark

This allows you to add the selected folder as a bookmark. Bookmarks are shown in the area marked (5).

Remove

This allows you to remove a bookmark. It is disabled for other folders and devices.

Rename...

This allows you to rename a bookmark or certain special folders. Note that it only renames the bookmark or special folder as shown inside the file dialog, not the actual folder it points to.

By default, this shows the path to the current folder. You can navigate to one of the parent folders by clicking on the desired part.

Alternatively, you can enter the name of an image. As soon as you start typing, the list of files (3) changes to show only the one containing the letter combination you entered.

If you need to navigate to another location not available by clicking, you can open a text field where you can type or paste the desired location. To access this use Ctrl + L, then after you have entered the location, press Enter.



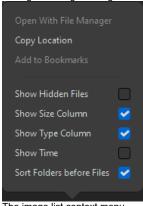
Note

You can use this location entry field to show the contents of a different folder, by entering the location of a folder; or open a specific image by entering the complete path to the image.

3. The contents of the selected folder is displayed here. Change your current folder by double left clicking on a folder in this panel. Select a file with a single left click. You can then open the file you have selected by clicking on the Open button. A double left click opens the file directly. Please note that you can open image files only.

By default, the list of image files is sorted alphabetically based on the image filenames. The column names above the image list can be used to select how you want the list sorted. Clicking on a column will use that column to sort the list. A small triangle in the column name shows that it is currently being used to sort the list. If the triangle is pointing up, sorting is done ascending. Clicking again on the same column, will changing the sort order to descending and the triangle will be pointing down.

Right-clicking an image or a folder in this list opens a context menu:



The image list context menu

Open With File Manager

This is only enabled for folders. If enabled, you can open the selected folder in the default file browser on your computer. Note: this command currently does not work on Windows.

Copy Location

This copies the location of the selected file to the clipboard.

Add to Bookmarks

This allows you to add the selected folder as a bookmark. Bookmarks are shown in the area marked (5). This is disabled if you have selected a file instead of an image.

Show Hidden Files

When enabled, hidden files will be shown in the list of image files (3).

Show Size Column

When enabled, the size of each image will be shown in the list of image files (3).

Show Type Column

When enabled, the file type of each image will be shown in the list of image files (3).

Show Time

When enabled, the modified time will be shown for each image in the list of image files (3) in addition to the modified date.

Sort Folders before Files

When enabled, any folders present in the currently selected folder, will be shown at the top of the list of image files (3). When disabled, the folders will be mixed together with the image files based on the selected sorting column.

4. A thumbnail version of the selected image in the image list (3) is displayed in the Preview window on the right. If it is an image format recognized by GIMP, file size, dimensions and image composition are displayed below the preview window.



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If your image has been modified, but the thumbnail didn't update, you

can click on the Preview image to update the thumbnail. To force updating the thumbnail even if it hasn't changed, use Ctrl + click.

5. This part of the list shows the folders that you have bookmarked. You can add bookmarks by using the Add to Bookmarks option that is shown when you right-click a folder in the image list panel (3).

You can remove a bookmark by using the Remove command that is shown when you right click on a bookmark. This right click menu can also be used to Rename the bookmark. Renaming the bookmark does not rename the folder it points to.

- 6. By clicking the Other Locations label, a list of other known locations and devices on your computer will open in the image list pane. You can use this for easier access to certain locations on your computer that may not be directly available in the folders list on the left.
- 7. The Show All Files option, is usually unchecked. If you check this option, all files in the selected folder will be shown, instead of only the image files that GIMP recognizes.
- 8. Select File Type can be used to explicitly set the image file format. It is a drop-down list that shows all image file formats that GIMP recognizes. In general you don't need to worry about this, because in most cases GIMP can determine the file type automatically. The default is Automatically Detected, which causes GIMP to try to automatically detect the correct format.

In the rare cases where neither the file extension nor internal information in the file are enough to tell GIMP the file type, you can set it by selecting it from this list.



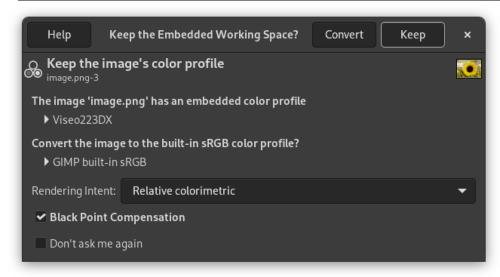
Tip

Explicitly selecting the file type can be useful in certain cases. You can e.g. do this to explicitly load the merged Photoshop image as saved in a PSD image (if present). Since Photoshop images can't always be correctly loaded in GIMP, this allows you to view the image as it was intended by Photoshop.

9. With Search you can look for a file or directory, even if you don't know the exact name. Click on Search, type a file name or even just a part of a name in the search box, and press Enter. The file display area (7) will then list all files and directories of your home directory (user directory on Windows) with names containing the text you searched for. Unfortunately you can't restrict the results to files of a specified type (10). Recently used shows the list of files you have recently opened.

5.1.3. Opening an image with a color profile

Figure 15.56. The Keep the Embedded Working Space Dialog



When you open a non XCF image that has a color profile attached to it, GIMP will open a dialog asking you whether you want to keep the original profile, or convert it to GIMP's built-in sRGB color profile.

Although we generally recommend to keep the color profile, using either choice is fine, since GIMP will do profile conversion in the background when needed.



If you want GIMP to stop asking you this question then check the Don't ask me again option. If you change your mind, you can always restore the question by going into Preferences, <u>Color Management</u>, Policies, File Open behavior.





5.2. Import File Formats

5.2. Import File Formats



5. File related Dialogs

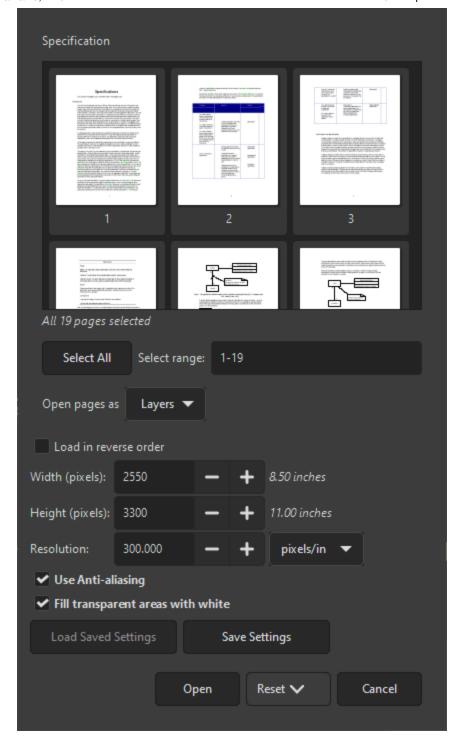


5.2. Import File Formats

When opening a non-XCF image, some file formats have additional options that can be set to determine how GIMP will open the image. If that is the case, then a new dialog will open. This section will document the dialogs for all file formats that have such an import options dialog.

5.2.1. Import from PDF

Figure 15.57. The PDF Import dialog



If you select a PDF file to open, GIMP will show an extra dialog with options specific to this file type.

Page selection

You can select pages by typing one or more page numbers or ranges, separated by commas. For example, **4-7,9** selects pages 4, 5, 6, 7, and 9 of the document. The default is to select all of the pages in the document.

Open pages as

If this is set to Images, then GIMP will open each of the selected pages as a separate image. If it is set to Layers, then GIMP will create one image with each of the selected pages in its own layer.

Load in reverse order

By default the first page is loaded first, meaning it will become the bottom layer. If you check this option, the first page will be loaded last and become the top-most layer.

Image size

The size of the image created is controlled by the Width, Height, and Resolution settings. A PDF document contains information about its width and height in units of physical length so it is meaningful to set the width or

height of the image in pixels or its resolution in pixels per physical unit of length: as you set any of these three parameters, the other two will automatically adjust to match.

Use Anti-aliasing

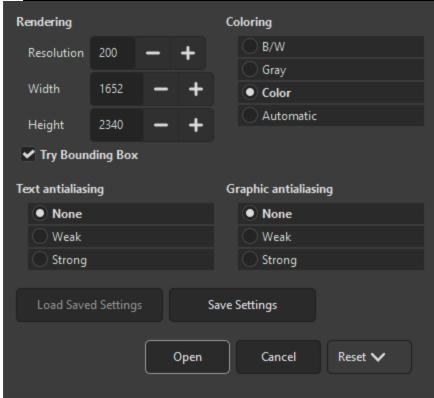
Check this box to apply <u>antialiasing</u> to text in the image.

Fill transparent areas with white

When checked, all transparent areas in PDF pages will be filled with white. When unchecked, transparent areas will stay transparent.

5.2.2. Import from PostScript

Figure 15.58. The Postscript Import dialog



If you select a PostScript file to open, GIMP will show an extra dialog with options specific to this file type.

Rendering

The size of the image created is controlled by the Width, Height, and Resolution settings. A PostScript document contains information about its width and height in units of physical length so it is meaningful to set the width or height of the image in pixels or its resolution in pixels per physical unit of length: as you set any of these three parameters, the other two will automatically adjust to match.

Coloring

Select B/W to have GIMP create the image as a 2-color indexed image, Gray for a grayscale image, or Color for an RGB image (see <u>Section 1, "Image Types"</u> for a full explanation of these different image modes). If you select Automatic then GIMP will try to determine the most suitable mode from the contents of the file.

Try Bounding Box

If this is checked, GIMP will use the bounding box information in the PostScript file to determine how much of the page to use: effectively, this is equivalent to cropping whitespace from the edges of the image. It is possible for a PostScript file to contain no bounding box information, in which case this option will be ignored.

Pages

You can select pages by typing one or more page numbers or ranges, separated by commas. For example, **4-7,9** selects pages 4, 5, 6, 7, and 9 of the document. The default is to select all of the pages in the document. Note: this is only visible if there is more than one page.

Open as

If this is set to Images, then GIMP will open each of the selected pages as a separate image. If it is set to Layers, then GIMP will create one image with each of the selected pages in its own layer. Note: this is only visible if there is

more than one page.

Antialiasing

You can choose to have GIMP apply <u>antialiasing</u> separately for text and for graphics in the imported image. Either Weak or Strong antialiasing may be applied: usually you should select Strong.

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5. File related Dialogs
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5.3. Save File

3/28/25, 1:23 PM 5.3. Save File

5.3. Save File



5. File related Dialogs



5.3. Save File

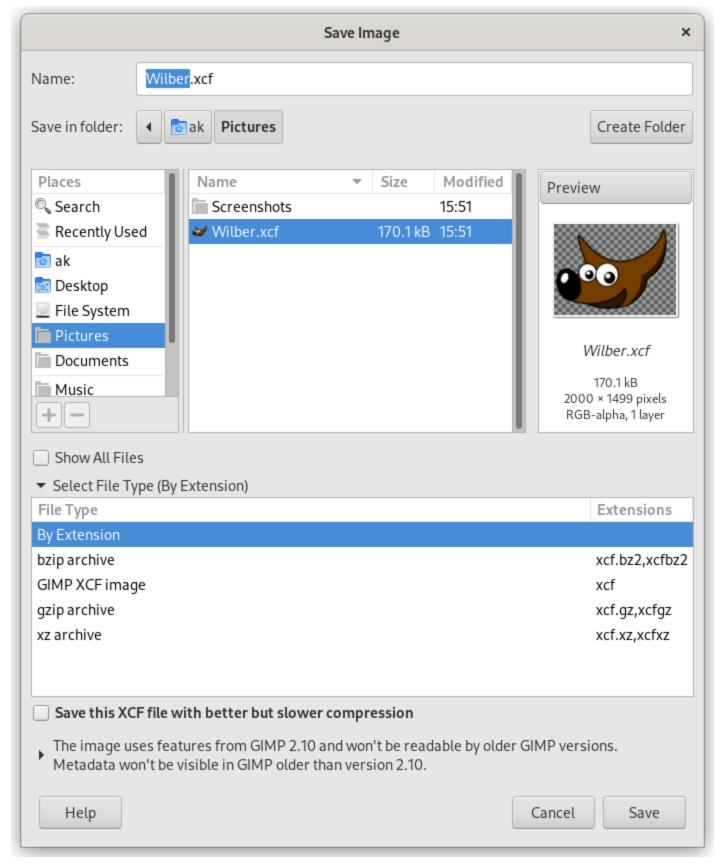
The Save command saves your image to disk in XCF format. For other image file formats you should use the Export command. If you try to save to a format other than XCF, you get an error message. The error message dialog contains a link that opens the Export Image dialog. Please see Section 1.1, "Save / Export Images".

If you have already saved the image, the previous image file is replaced with the current version. If you have not already saved the image, the Save command opens the Save Image dialog.

If you quit without having saved your image, GIMP asks you if you really want to do so.

Figure 15.59. Save Image Dialog

3/28/25, 1:23 PM 5.3. Save File



5.3.1. Activating the Dialog

- You can access this command in the main menu through File → Save,
- or from the keyboard by using the shortcut Ctrl + S.
- Use Ctrl + Shift + S to save the opened image with a different name.

3/28/25, 1:23 PM 5.3. Save File

5.3.2. The Save Image Dialog

In the file browser, you can edit filename and extension directly in the Name field (default is "Untitled.xcf") or by selecting an existing XCF file to override in name list. Navigate the folders if you prefer a different image destination. You can also create a new folder if necessary.

Select File Type. If you expand this option, you can select a compressed file format for your XCF file in the list.



3/28/25, 1:24 PM 5.4. Export File

5.4. Export File

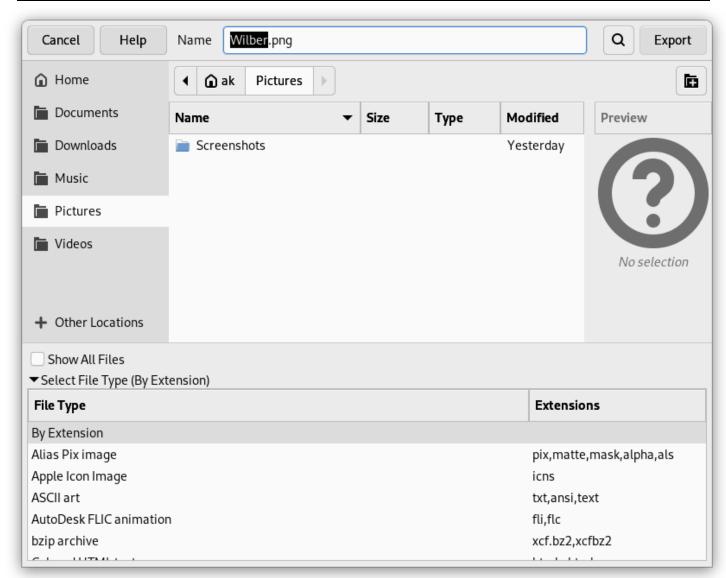




5.4. Export File

GIMP uses the Save command only for saving images in its native XCF format. When you need your image in a different file format, you can use the Export command.

Figure 15.60. Export Image Dialog



5.4.1. Activating the Dialog

- You can access this command in the main menu through File → Export As...,
- or from the keyboard by using the shortcut Ctrl + Shift + E.

5.4.2. The Export Image Dialog

In the file browser, you can edit filename and extension directly in the Name field (default is "Untitled.png") or by selecting an existing file to override in name list. Navigate the folders if you prefer a different image destination. You can also create a new folder if necessary.

3/28/25, 1:24 PM 5.4. Export File

Select File Type. If you expand this option, you can select the file format and related file extension for your file in the list. File formats dialogs are described in Section 1, "Files".

5.4.3. Exporting

When file name and destination are set, click on Export. This opens the export dialog for the specified file format.



Note

If the name you entered already existed, you will be asked if you want to overwrite that file or not. If a layer mask or channel is selected instead of a layer, and the export format does not support this, you will be asked for confirmation.

If you have loaded a non-XCF file, the File \rightarrow Overwrite command (followed by the file name) allows you to overwrite the original file, keeping its file format.

If you modify an image that you already have exported before, the File \rightarrow Export to command (followed by the file name) allows you to export the file again in the same file format.

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5.3. Save File



5.5. Export File Formats

5.5. Export File Formats



5. File related Dialogs



5.5. Export File Formats

When exporting an image, most file formats have additional options that can be set. If that is the case, a new dialog opens after you have selected the filename and export file format. The following pages document the dialogs for export file formats in alphabetical order.

Be aware that not all formats support all kinds of images. In particular certain formats may not be able to show transparency (like jpeg), while only a few formats support exporting an animation (like webp and gif).

5.5.1. Exporting Animations

Some file formats supported by GIMP allow you to export an animation, most notably webp and gif, but also mng, however this last format isn't supported very well by most applications.

There is limited support in GIMP for creating animations. When exporting it is assumed that each layer in your image represents a frame in your animation. Exporting to animations usually doesn't support layer groups, so it's best not to use those if you want to make an animation.

You can adjust the name of a layer, by adding some parameters in parenthesis, to let the animation export know how that layer needs to be animated and for how long it should be shown before going to the next frame. When both these things are set a name usually looks like this: "My layer name (delay in ms)(animation command)".

The delay sets the amount of time the frame will be visible, e.g. (200 ms) to set it to 200 milliseconds.

The animation command specifies how the frame is combined with the previous one. You can only choose one animation command for each layer. The available commands are:

replace

The (replace) command means that this layer (frame) will completely replace the previous one.

combine

The (combine) command means that this layer (frame) will be combined with the previous one. Only the visible parts in this layer will replace that of the previous layer. Using (combine) can reduce the size of the animation and may improve playback speed for large size animations.

You can use the <u>optimize (for GIF)</u> command to change your (replace) layers to (combine). This adjusts the layer to only contain what is different from the previous one and then sets it to (replace). Don't hesitate to use this, even if you plan to export to a different format than GIF. This command was named at a time that there were not many other animation options than GIF, but can be used for any animation format that supports combining. Note that you can also do the reverse and <u>unoptimize</u> the animation, setting each layer to (replace).

GIMP has a limited animation playback ability that you can use to preview your animation.



5.4. Export File







5.6. Export Image as GIF

5.6. Export Image as GIF

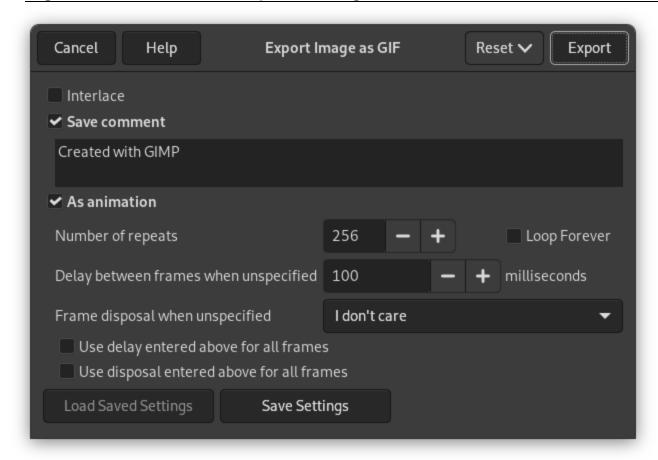


5. File related Dialogs



5.6. Export Image as GIF

Figure 15.61. The GIF Export dialog





Warning

The GIF file format does not support some basic image properties such as *partial transparency* and *print resolution*.

GIMP also only supports exporting with a maximum of 256 colors. For best results, set your image to <u>indexed mode</u> when you intend to export to GIF. If you care for these properties, use a different file format like PNG.

GIF Options

Interlace

Checking interlace allows an image on a web page to be progressively displayed as it is downloaded. Progressive image display is useful with slow connection speeds, because you can stop an image that is of no interest; interlace is of less use today with our faster connection speeds.

Save comment

GIF comments support only 7-bit ASCII characters. If you use a character outside the 7-bit ASCII set, GIMP will export the image without a comment, and then inform you that the comment was not saved.

Animated GIF Options

When working on an animation, the name of the layer can be used to specify certain parameters. For more details see exporting animations.

Note: exporting a GIF animation does not support layer groups.

As animation

When this option is checked, the image will be exported as an animation. Note that this option will be disabled (and the animation options will not be visible) if the image has only one layer.

Number of repeats

You can set how many times the animation will repeat before it stops. This value is ignored if Loop forever is checked.

Loop forever

When this option is checked, the animation will play repeatedly until you stop it.

Delay between frames when unspecified

You can set the delay, in milliseconds, between frames if it has not been set before. In this case, you can modify every delay in the Layers dialog. Note that some operating systems and applications may override with a lower frame rate due to computer speed, performance, or other technical limitations.

Frame disposal when unspecified

If this has not been set before, you can set how frames will be superimposed. You can select among three options:

- I don't care: you can use this option if all your layers are opaque. Layers will overwrite what is beneath.
- Cumulative layers (combine): previous frames will not be deleted when a new one is displayed.
- o One frame per layer (replace): previous frames will be deleted before displaying a new frame.

Use delay entered above for all frames

The Delay between frames when unspecified value will be used for all frames.

Use disposal entered above for all frames

The Frame disposal when unspecified value will be used for all frames.







5.5. Export File Formats



5.7. Export Image as HEIF/HEIC

5.7. Export Image as HEIF/HEIC



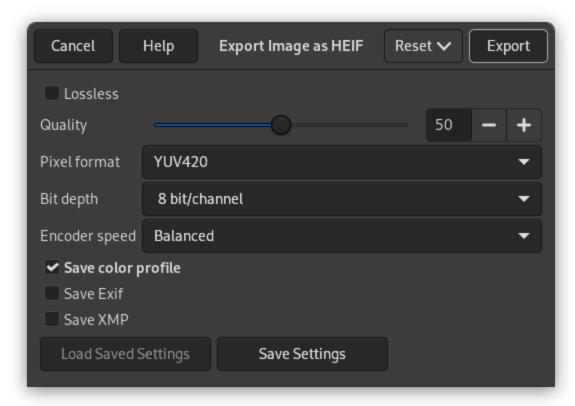
5. File related Dialogs



5.7. Export Image as HEIF/HEIC

HEIF stands for High Efficiency Image File Format. Also known as HEIC High Efficiency Image Coding. Twice as much information can be stored in a HEIF image as in a JPEG image of the same size, resulting in a better quality. As of September 2022, no browser supports HEIF natively. More information in Wikipedia.

Figure 15.62. The HEIF/HEIC Export dialog



HEIF Options

Lossless

When checked, the image will be exported with lossless compression. This will create a higher quality image at the cost of a larger file size.

Quality

If Lossless is not checked, this value determines the quality of the image compression. 100 provides the best quality image and lowest compression, while 0 provides the highest compression and worst quality image.

Pixel format

Defines what pixel format the exported image should use for color sub-sampling. There are three options:

- YUV420: Suitable for photographs with lossy compression. This format is most compatible with other software that uses HEIF.
- YUV444: When used with a high Quality setting, this format exports a visually lossless image.
- RGB: Useful when exporting images with true lossless quality.

Bit depth

Determines if the pixel data should be stored using 8 bits, 10 bits, or 12 bits per color channel.

Encoder speed

The tradeoff between speed and compression. Slow will provide a smaller filesize but takes longer to encode.

Save color profile

If checked, the color profile is embedded in the exported image.

Save Exif

If checked, the Exif metadata is embedded in the exported image.

Save XMP

If checked, the XMP metadata is embedded in the exported image.







5.6. Export Image as GIF



5.8. Export Image as JPEG

5.8. Export Image as JPEG



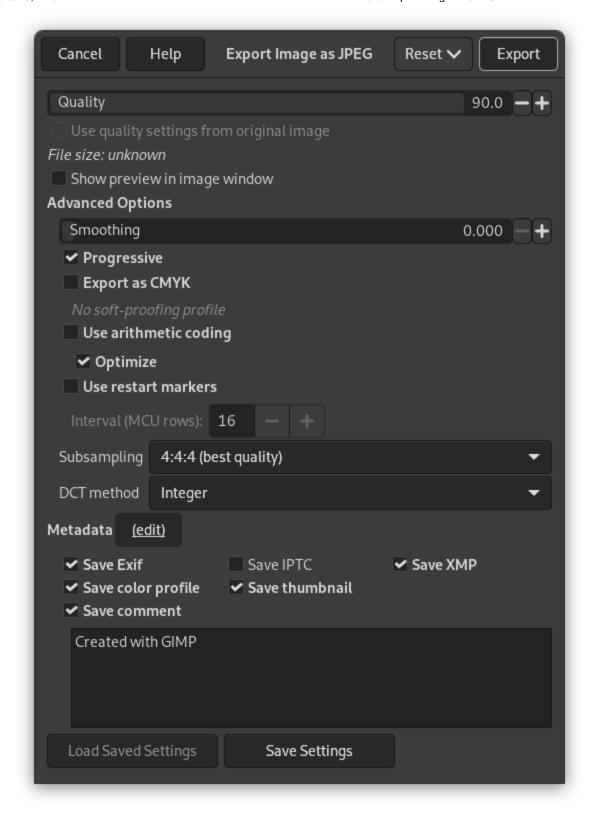
5. File related Dialogs



5.8. Export Image as JPEG

JPEG files usually have an extension .jpg, .JPG, or .jpeg. It is a very widely used format, because it compresses images very efficiently, while minimizing the loss of image quality. No other format comes close to achieving the same level of compression. It does not, however, support transparency or multiple layers.

Figure 15.63. The JPEG Export dialog



The JPEG algorithm is quite complex, and involves a bewildering number of options, whose meaning is beyond the scope of this documentation. Unless you are a JPEG expert, the Quality parameter is probably the only one you will need to adjust.

Quality

When you save a file in JPEG format, a dialog is displayed that allows you to set the Quality level, which ranges from 0 to 100. Values above 95 are generally not useful, though. The default quality of 85 usually produces excellent results, but in many cases it is possible to set the quality substantially lower without noticeably degrading the image. You can test the effect of different quality settings by checking Show Preview in image window in the JPEG dialog.



Note

Please note, that the numbers for the JPEG quality level have a different meaning in different applications. Saving with a quality level of 80 in GIMP is not necessarily comparable with saving with a quality level of 80 in a different application.

Use quality settings from original image

If a particular quality setting (or "quantization table") was attached to the image when it was loaded, then this option allows you to use them instead of the standard ones.

If you have only made a few changes to the image, then re-using the same quality setting will give you almost the same quality and file size as the original image. This will minimize the losses caused by the quantization step, compared to what would happen if you used different quality setting.

If the quality setting found in the original file are not better than your default quality settings, then the option "Use quality settings from original image" will be available but not enabled. This ensures that you always get at least the minimum quality specified in your defaults. If you did not make major changes to the image and you want to save it using the same quality as the original, then you can do it by enabling this option.

Show preview in image window

Checking this option causes each change in quality (or any other JPEG parameter) to be shown in the image display. (This does not alter the image: the image reverts back to its original state when the JPEG dialog is closed.)

Advanced Options

Some information about the advanced settings:

Smoothing

JPG compression creates artifacts. By using this option, you can smooth the image when saving, reducing them. But your image becomes somewhat blurred.

Progressive

With this option enabled, the image chunks are stored in the file in an order that allows progressive image refinement during a slow connection web download. The progressive option for JPG has the same purpose as the interlace option for GIF. Unfortunately, the progressive option produces slightly larger JPG files (than without the progressive option).



Note

Beware that certain older TVs and photo frames (and maybe other devices) may not be able to show jpeg images that have been exported with the progressive setting enabled (which is the default).

Export as CMYK

Whether to export using a CMYK Color Profile.

Use arithmetic coding

Arithmetic encoding is a form of entropy encoding (a lossless data compression scheme) that can be used in exporting as JPEG. Images using arithmetic encoding can be 5 - 10 % smaller. But older software may have trouble opening these images.

Optimize

If you enable this option, the optimization of entropy encoding parameters will be used. The result is typically a smaller file, but it takes more time to generate.

Use restart markers

The image file can include markers which allow the image to be loaded as segments. If a connection is broken while loading the image in a web page, loading can resume from the next marker.

Interval (MCU rows)

JPEG images are stored as a series of compressed square tiles named MCU (Minimum Coding Unit). You can set the size of these tiles (in pixels).

Subsampling

The human eye is not sensitive in the same way over the entire color spectrum. The compression can use this to treat slightly different colors that the eye perceives as very close, as identical colors. Three methods are available:

- 1x1,1x1,1x1 (best quality): Commonly referred to as (4:4:4), this produces the best quality, preserving borders and contrasting colors, but compression is less.
- 2x1,1x1,1x1 (4:2:2): This is the standard subsampling, which usually provides a good ratio between image quality and file size. There are situations, however, in which using no subsampling (4:4:4) provides a noticeable increase in the image quality; for example, when the image contains fine details such as text over a uniform background, or images with almost-flat colors.

- 1x2,1x1,1x1 This is similar to (2x1,1x1,1x1), but the chroma sampling is in the horizontal direction rather than the vertical direction; as if someone rotated an image.
- 2x2,1x1,1x1 (smallest file): Commonly referred to as (4:1:1), this produces the smallest files. This suits images with weak borders but tends to denature colors.

DCT Method

DCT is "discrete cosine transform", and it is the first step in the JPEG algorithm going from the spatial to the frequency domain. The choices are "float", "integer" (the default), and "fast integer".

- float: The float method is very slightly more accurate than the integer method, but is much slower unless your machine has very fast floating-point hardware. Also note that the results of the floating-point method may vary slightly across machines, while the integer methods should give the same results everywhere.
- integer (the default): This method is faster than "float", but not as accurate.
- fast integer: The fast integer method is much less accurate than the other two.

Metadata (edit)

You can click the "(edit)" link to open the metadata editor to change or add any metadata that you want to be included in the image. Note: you will also still need to enable the relevant metadata saving options listed below.

Metadata

If the image you loaded has Exif, XMP, IPTC metadata, select which metadata you want to preserve keep when exporting.

You can also save the color profile, a custom comment to be shown in the <u>Image Properties</u>, and include a small preview thumbnail of the image when exporting.

4





5.7. Export Image as HEIF/HEIC



5.9. Export Image as MNG

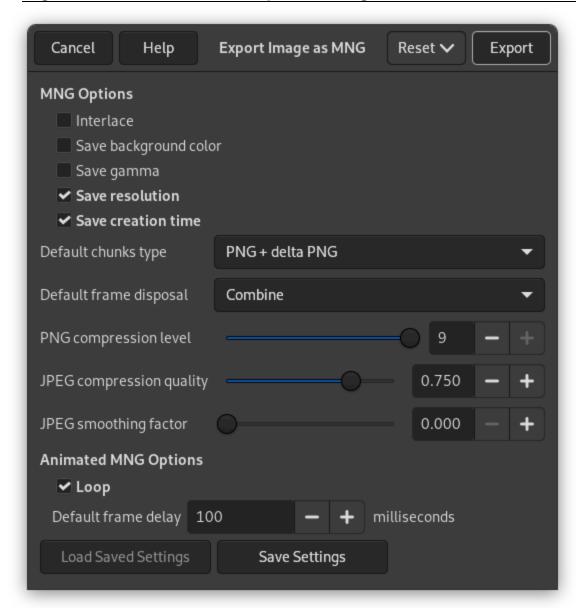
5.9. Export Image as MNG





5.9. Export Image as MNG

Figure 15.64. The MNG Export dialog



MNG is acronym for "Multiple-Image Network Graphics".

When working on an animation, the name of the layer can be used to specify certain parameters. For more details see <u>exporting animations</u>.

No common web browsers recognize the MNG animation format. See https://en.wikipedia.org/wiki/Multiple-image Network Graphics.







5.8. Export Image as JPEG

Report a bug in GIMP Report a documentation error

5.10. Export Image as PNG

5.10. Export Image as PNG

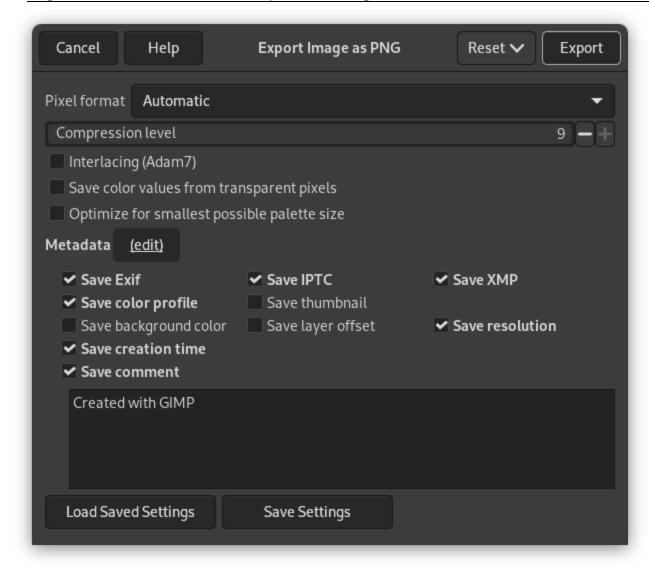


5. File related Dialogs



5.10. Export Image as PNG

Figure 15.65. The PNG Export dialog



Pixel format

By default your PNG image is exported in a pixelformat that resembles the settings of your image in GIMP. This is usually what you want, but when you need a specific output format you can change this here to 8 or 16 bits per channel RGB or Grayscale, with or without alpha channel.

Compression level

Since compression is not lossy, the only reason to use a compression level less than 9, is if it takes too long to compress a file on a slow computer. Nothing to fear from decompression: it is as quick whatever the compression level.

Interlacing

Checking interlace allows an image on a web page to be progressively displayed as it is downloaded. Progressive image display is useful with slow connection speeds, because you can stop an image that is of no interest; interlace is of less use today with our faster connection speeds.

Save color values from transparent pixels

When this option is checked, the color values are saved even if the pixels are completely transparent. But this is possible only with a single layer, not with a merged composition. When a multi-layer image gets exported to a single-layer file format, there is no way GIMP could preserve the color values in the transparent pixels.

Metadata (edit)

You can click the "(edit)" link to open the metadata editor to change or add any metadata that you want to be included in the image. Note: you will also still need to enable the relevant metadata saving options listed below.

Save background color

If your image has many transparency levels, the Internet browsers that recognize only two levels, will use the background color of your Toolbox instead.

Save layer offset

PNG supports an offset value called the "oFFs chunk", which provides position data. Unfortunately, PNG offset support in GIMP is broken, or at least is not compatible with other applications, and has been for a long time. Do not enable offsets, let GIMP flatten the layers before saving, and you will have no problems.

Save resolution

Save the image resolution, in ppi (pixels per inch).

Save creation time

Date the file was saved.

Save comment

You can read this comment in the Image Properties.

Other Metadata

If the image you loaded has Exif, XMP, IPTC metadata, select which metadata you want to preserve keep when exporting.

You can also save the color profile, a custom comment to be shown in the <u>Image Properties</u>, and include a small preview thumbnail of the image when exporting.

Save Settings

Click to save the current settings. Later, you can use Load Saved Settings to load the saved settings.



Note

The PNG format supports indexed images. Using fewer colors, therefore, results in a smaller file; this is especially useful for creating web images; see Section 6.6, "Indexed mode".

Computers work on 8 bits blocks named "Byte". A byte allows 256 colors. Reducing the number of colors below 256 is not useful: a byte will be used anyway and the file size will not be less. More, this "PNG8" format, like GIF, uses only one bit for transparency; only two transparency levels are possible, transparent or opaque.









5.11. Export Image as TIFF

5.11. Export Image as TIFF

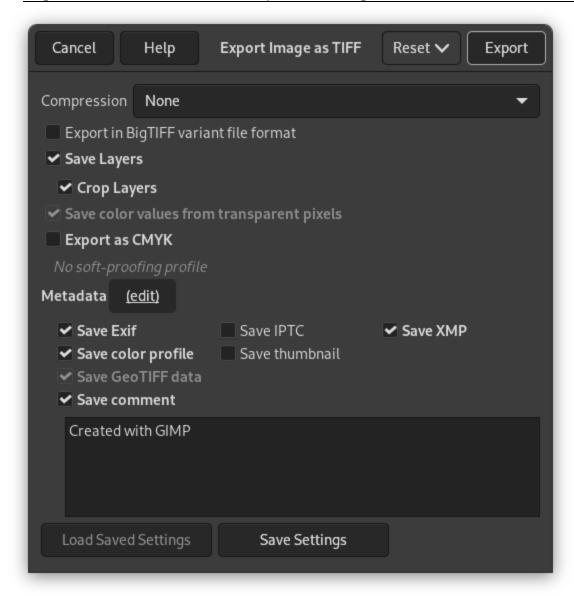


5. File related Dialogs



5.11. Export Image as TIFF

Figure 15.66. The TIFF Export dialog



Compression

This option allows you to specify the algorithm used to compress the image.

- None: is fast, and lossless, but the resulting file can be very large.
- LZW: The image is compressed using the "Lempel-Ziv-Welch" algorithm, a lossless compression technique. This is efficient and fast. More information at [WKPD-LZW].
- Pack Bits: is a fast, simple compression scheme for run-length encoding of data. Apple introduced the
 PackBits format with the release of MacPaint on the Macintosh computer. A PackBits data stream consists of
 packets of one byte of header followed by data. (Source: [WKPD-PACKBITS])
- Deflate: is a lossless data compression algorithm that uses a combination of the LZ77 algorithm and Huffman coding. It is also used in Zip and Gzip files and PNG images. Source: [WKPD-DEFLATE].

- JPEG: is a very good compression algorithm but lossy. This is the same compression as used in JPEG images. Since it is lossy, you should not use this when image quality is important. This compression can not be used when your image is in indexed mode.
- CCITT Group 3 fax and CCITT Group 4 fax are black and white formats developed to transfer images by FAX.



Note

These two compression modes can only be selected, if the image is in indexed mode and reduced to two colors. Use Image \rightarrow Mode \rightarrow Indexed to convert the image to indexed mode. Make sure that "Use black and white (1-bit) palette" is checked.

Save layers

You can save layers when exporting to TIFF. Each layer will be a separate page in the TIFF image.

Crop layers

When Save layers is checked, this option, which is enabled by default, will resize all layers to the size of the image. TIFF images can not have negative offsets. This option enables you to import the TIFF again without having to change the position of layers that had a different size as the image in the original.

Save color values from transparent pixels

When this is enabled the color values are saved even if the pixels are completely transparent.

Export as CMYK

Whether to export using a CMYK Color Profile.

Metadata (edit)

You can click the "(edit)" link to open the metadata editor to change or add any metadata that you want to be included in the image. Note: you will also still need to enable the relevant metadata saving options listed below.

Save Exif data

When this option is enabled existing EXIF metadata will be saved in the exported TIFF image.

Save IPTC data

When this option is enabled existing IPTC metadata will be saved in the exported TIFF image.

Save XMP data

When this option is enabled existing XMP metadata will be saved in the exported TIFF image.

Save color profile

When this option is enabled the color profile will be saved in the exported TIFF image.

Save thumbnail

When this option is enabled a thumbnail will be saved as the second page in the exported TIFF image. This will also cause certain EXIF tags to be saved even if you have disabled saving EXIF metadata.

Save GeoTIFF data

When this option is enabled GeoTIFF metadata that was present in the original image will be saved in the exported TIFF image.

Save comment

Here you can enable saving a comment that is associated with the image. The comment can be entered in the text box below this option.







5.10. Export Image as PNG



5.12. Export Image as WebP

5.12. Export Image as WebP

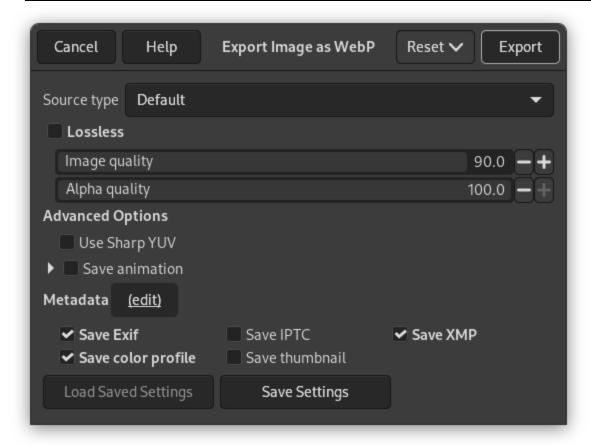


5. File related Dialogs



5.12. Export Image as WebP

Figure 15.67. The WebP Export dialog



Source Type

This selects the type of image you are trying to export. Presumably this will help in deciding the best way to compress the image.

Choices are: Default, Picture for digital pictures, like portraits or inside shots, Photo for outdoor photography with natural lighting, Drawing for hand or line drawing, with high-contrast details, Icon for small-sized colorful images, and Text for images containing mostly text.

Lossless

When checked, the image will be saved in a way that keeps the original quality. This disables the Image quality and Alpha quality settings. When unchecked, the image will be saved based on the quality settings below, which may cause some loss of quality, but at a better compression ratio. This is the default.

Image quality, Alpha quality

These settings determine at what quality the image will be saved. A higher image quality usually means a larger filesize. When filesize is important you can check if a lower quality is still good enough for your purposes.

Use Sharp YUV

When checked, a sharper and more accurate RGB to YUV conversion method is used to export the image. This can better preserve fine details like thin lines in the final image. Setting this option can increase the export time for an image, and it is only available when Lossless is not checked.

Save animation

When enabled, an animation will be created, where each layer is a separate frame in the animation.

When working on an animation, the name of the layer can be used to specify certain parameters. For more details see <u>exporting animations</u>.

Metadata (edit

You can click the "(edit)" link to open the metadata editor to change or add any metadata that you want to be included in the image. Note: you will also still need to enable the relevant metadata saving options listed below.

Save Exif data

When this option is enabled existing EXIF metadata will be saved in the exported image.

Save IPTC data

When this option is enabled existing IPTC metadata will be saved in the exported image.

Save XMP data

When this option is enabled existing XMP metadata will be saved in the exported image.

Save color profile

When this option is enabled the color profile will be saved in the exported image.

Save thumbnail

When this option is enabled a thumbnail will be saved in the exported image.





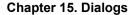


5.11. Export Image as TIFF



6. Preferences Dialog

6. Preferences Dialog







6. Preferences Dialog

6.1. Introduction

Figure 15.68. List of preference pages

- System Resources ☑ Debugging & Color Management Image Import & Export ♣ Playground Tool Options 🕶 🍱 Default Image ☐ Default Grid
 ☐ Default Grid 🕶 🛅 Interface **B**β Theme ্বৰ Icon Theme ★ Toolbox TDialog Defaults C Help System Display Window Management 🕶 🔤 Canvas Interaction Modifiers Snapping ▼

 ☐ Image Windows Appearance ■ Title & Status **▼ ∰**Input Devices Tinput Controllers Folders Folders
 - The preferences dialog can be accessed from the main menu, through Edit → Preferences. It lets you customize many aspects of the way GIMP works. The following sections detail the settings that you can customize, and what they affect.

All of the Preferences information is stored in a file called gimprc in your configuration folder, so if you are a "power user" who would rather work with a text editor than a graphical interface, you can alter preferences by editing that

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file. If you do, and you are on a Linux system, then **man gimprc** will give you a lot of technical information about the contents of the file and what they are used for.



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5.12. Export Image as WebP



6.2. System Resources

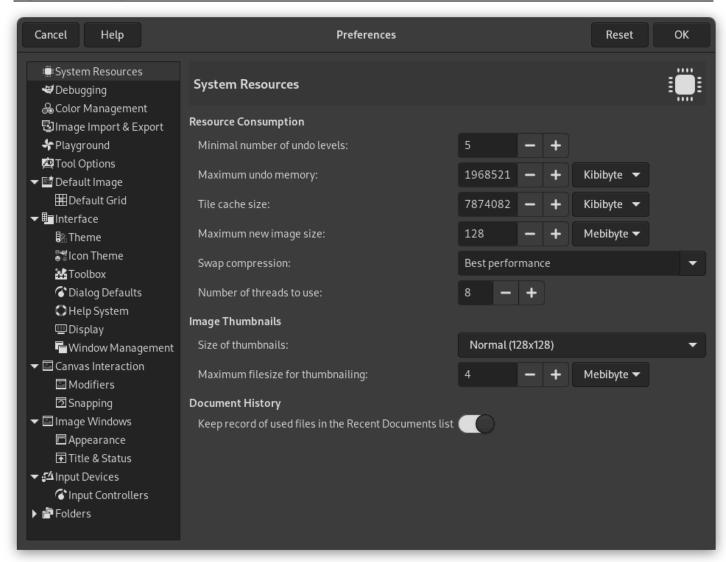
6.2. System Resources





6.2. System Resources

Figure 15.69. System Resources Preferences



This page lets you customize the amount of system memory allocated for various purposes. It also allows you to set the size of thumbnail files that GIMP produces.

6.2.1. Activating the Dialog

The preferences dialog can be accessed from the main menu, through $\, \, \text{Edit} \to \text{Preferences}. \,$

6.2.2. Options

Resource Consumption

Minimal number of undo levels

GIMP allows you to undo most actions by maintaining an "Undo History" for each image, for which a certain amount of memory is allocated. Regardless of memory usage, however, GIMP always permits some minimal number of the most recent actions to be undone: this is the number specified here. See Section 3, "Undoing" for more information about GIMP's Undo mechanism.

Maximum undo memory

This is the amount of undo memory allocated for each image. If the Undo History size exceeds this, the oldest points are deleted, unless this would result in fewer points being present than the minimal number specified above.

Tile cache size

This is the amount of system RAM allocated for GIMP image data. If GIMP requires more memory than this, it begins to swap to disk, which may in some circumstances cause a dramatic slowdown. You are given an opportunity to set this number when you install GIMP, but you can alter it here. See How to Set Your Tile Cache for more information.

Maximum new image size

This is not a hard constraint: if you try to create a new image larger than the specified size, you are asked to confirm that you really want to do it. This is to prevent you from accidentally creating images much larger than you intend, which can either crash GIMP or cause it to respond verrrrrrry slowwwwwwwly.

Swap compression

This sets the compression method used for tile data stored in the swap. Compression can both reduce the swap size, and increase its speed, by minimizing input and output. Values are best performance (the default), balanced, and best compression, or none to disable compression altogether.

Number of threads to use

Multi-threading allows making use of multiple cores for processing. Not all features make use of that for the moment. A point of interest is that multi-threading happens through GEGL processing, but also in GIMP core itself, for instance to separate painting from display.

Network Access

Check for updates

When this option is enabled, GIMP will regularly check at start-up if a new version is available. If there is, you will get an alert that you can update. Note that this option requires you to have an internet connection and for GIMP to be allowed access to the internet.

Image Thumbnails

Size of thumbnails

This options allows you to set the size of the thumbnails shown in the File Open dialog (and also saved for possible use by other programs). The options are "No thumbnails", "Normal (128x128)", and "Large (256x256)".

Maximum filesize for thumbnailing

If an image file is larger than the specified maximum size, GIMP will not generate a thumbnail for it. This options allows you to prevent thumbnailing of extremely large image files from slowing GIMP to a crawl.

Document History

Keep record of used files in the Recent Documents list

When checked, files you have opened will be saved in the Document history. You can access the list of files with the $\underline{\text{Document history dialog}}$ from the main menu: File \rightarrow Open Recent \rightarrow Document History.

6.2.3. How to Set Your Tile Cache

This section covers the Tile cache size setting under **System Resources**.

During the data processing and manipulation of images, GIMP can use a lot of memory. The more you have available, the better. GIMP uses available memory and other resources as effectively as possible, striving to let you work on your images without more slowdowns than necessary.

If GIMP needs more (RAM) memory than you have, it starts storing parts of the image data needed to work on your image on a hard disk. These parts are called tiles. Access to disk is slower, but at least it allows you to keep working. The disk storage is called a cache and the entire system is called "tile cache".

The tile cache value determines when GIMP starts using cache instead of faster RAM memory. A low value for the tile cache means that GIMP sends data to disk more quickly then needed, not making good use of the available RAM. Too high a value for tile cache, and other applications start to have less system resources, forcing them to use swap space and thus slow down, or it may cause some of them to start to malfunction or even terminate due to lack of RAM. How do you choose a number for the Tile Cache size? Here are some tips to help you decide what value to use, as well as a few tricks:

- The easiest method is to just forget about this and hope the default works. This was a usable method when computers had little RAM, and most people just tried to make small images with GIMP while running one or two other applications at the same time. If you want something easy and only use GIMP to make screenshots and logos, this is probably the best solution.
- If you have a modern computer with plenty of memory, setting the Tile Cache to half of your RAM will probably give good performance for GIMP in most situations without depriving other applications. Probably even 3/4 of your RAM would be fine.
- Start changing the value a bit each time and check that it goes faster and faster with each increase, but the system does not complain about lack of memory.
 Be forewarned that sometimes lack of memory shows up suddenly with some applications being killed to make space for the others.
- Do some simple math and calculate a viable value. Maybe you will have to tune it later, but maybe you have to tune it anyway with the other previous methods. At least you know what is happening and can get the best from your computer.

Let's suppose you prefer the last option, and want to get a good value to start with. First, you need to get some data about your computer. This data is the amount of RAM installed in your system, the operating system's swap space available, and a general idea about the speed of the disks that store the operating system's swap and the directory used for GIMP's swap. You do not need to do disk tests, nor check the RPM of the disks, the thing is to see which one seems clearly faster or slower, or whether all are similar. You can change GIMP's swap directory in the Folders page of the Preferences dialog.

The next thing to do is to see how much resources you require for other apps you want to run at the same time as GIMP. So start all your tools and do some work with them, except GIMP of course, and check the usage. You can use applications like free, top, or Process Explorer, depending on what OS and what environment you use. The numbers you want is the memory left, including file cache.

Linux's free command does the maths for you: check the column that says "free", and the line "-/+ buffers/cache". Note down also the free swap.

Now time for decisions and a bit of simple math. Basically the concept is to decide if you want to base all Tile Cache in RAM, or RAM plus operating system swap:

- 1. Do you change applications a lot? Or keep working in GIMP for a long time? If you spend a lot of time in GIMP, you can consider free RAM plus free swap as available; if not, you need to go to the following steps. (If you're feeling unsure about it, check the following steps.) If you are sure you switch apps every few minutes, only count the free RAM and just go to the final decision; no more things to check.
- 2. Does the operating system swap live in the same physical disk as GIMP swap? If so, add RAM and swap. Otherwise go to the next step.
- 3. Is the disk that holds the OS swap faster or the same speed as the disk that holds the GIMP swap? If slower, take only the free RAM; if faster or similar, add free RAM and swap.
- 4. You now have a number, be it just the free RAM or the free RAM plus the free OS swap. Reduce it a bit, to be on the safe side, and that is the Tile Cache you could use as a good start.

As you can see, all is about checking the free resources, and decide if the OS swap is worth using or will cause more problems than help.

There are some reasons you want to adjust this value, though. The basic one is changes in your computer usage pattern, or changing hardware. That could mean your assumptions about how you use your computer, or the speed of it, are no longer valid. That would require a reevaluation of the previous steps, which can drive you to a similar value or a completely new value.

Another reason to change the value is because it seems that GIMP runs too slowly, while changing to other applications is fast: this means that GIMP could use more memory without impairing the other applications. On the other hand, if you get complaints from other applications about not having enough memory, then it may benefit you to not let GIMP hog so much of it.

If you decided to use only RAM and GIMP runs slowly, you could try increasing the value a bit, but never to use also all the free swap. If the case is the contrary, using both RAM and swap, and you have problems about lack of resources, then you should decrease the amount of RAM available to GIMP.

Another trick is to put the Swap Dir on a very fast disk, or on a different disk than the one where most of your files reside. Spreading the operating system swap file over multiple disks is also a good way to speed things up, in general. And of course, you might have to buy more RAM or stop using lots of programs at the same time: you can not expect to edit a poster on a computer with insufficient RAM and be fast.

You can also check what memory requirements your images have. The larger the images, and the number of undo steps, the more resources you need. This is another way to choose a number, but it is only good if you always work with the same kind of images, and thus the real requirements do not vary. It is also helpful to know if you will require more RAM and/or disk space.

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6. Preferences Dialog

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6.3. Debugging

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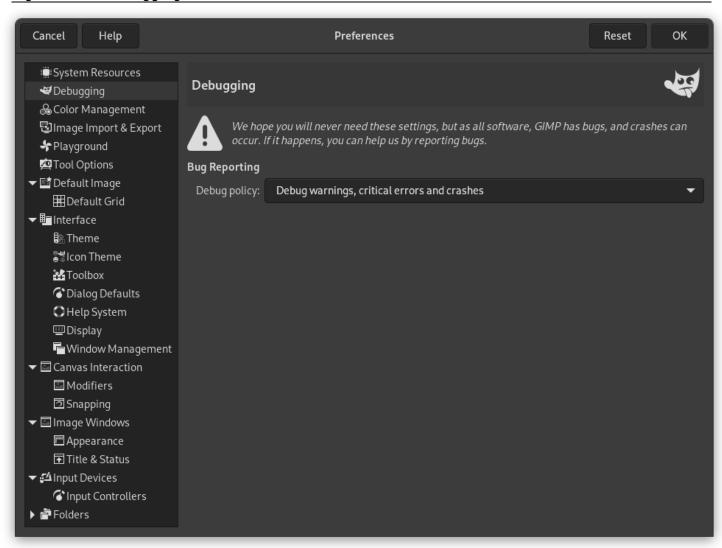
6.3. Debugging

6. Preferences Dialog

6.3. Debugging



Figure 15.70. Debugging Preferences



6.3.1. Activating the Dialog

The preferences dialog can be accessed from the main menu, through $\, \, \text{Edit} \to \text{Preferences}.$

6.3.2. Options

Debug Policy

The Debug Policy tells GIMP what you want to do if GIMP encounters a problem. You have four choices:

Debug warnings, critical errors and crashes

This is the most intrusive option. Usually only used when trying to find a specific bug. This starts the debugger for any kind of crash, error or warning.

Debug critical errors and crashes

Start debugging when GIMP encounters a crash or a critical error.

Debug crashes only

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Only start debugging when GIMP encounters a crash.

Never debug GIMP

Whatever happens, the debugger will never be started.

Effective debugging is only possible if you have gdb or lldb installed.



6.2. System Resources





6.4. Color Management



6. Preferences Dialog



6.4. Color Management



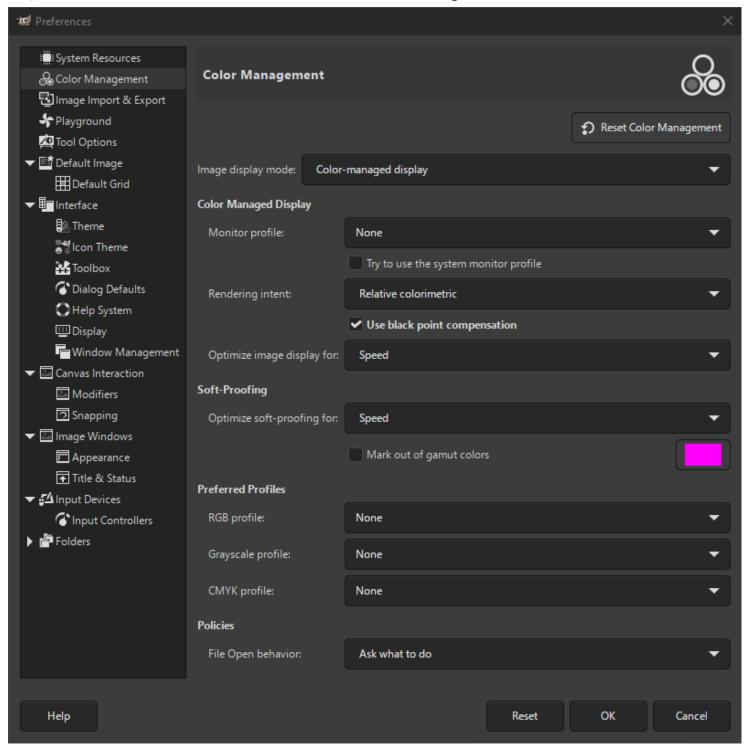
Note

For color profile related actions of an image file, see Section 6.8, ""Color Management" Submenu".

For color display related view settings, see Section 5.13, "Color

Management".

Figure 15.71. Color Management Preferences



This page lets you customize GIMP color management.

6.4.1. Activating the Dialog

The preferences dialog can be accessed from the main menu, through Edit → Preferences.

6.4.2. Options

Some of the options let you choose a color profile from a menu. If the desired profile is not present in the menu yet, you can add it by clicking on Select color profile from disk....



Tip

Files containing color profiles are easily recognizable by their .icc suffix. In addition to that they are usually stored together in only a few places. If

you are running GIMP on Mac OS X, you should try /Library/ColorSync/Profiles/ and Library/Printers/[manufacturer]/Profiles.

Image display mode

Using this option, you can decide how GIMP color management operates. There are three modes you can choose from:

- No color management: Choosing this disables color management in GIMP completely.
- Color managed display: This enables GIMP color management and provides a fully corrected display of the images
 according to the given color profile for the display.
- Soft-proofing: When choosing this option, you enable GIMP color management not only to apply the profile for the
 display, but also for the selected printer simulation profile. Doing so, you can preview the color results of a print with that
 printer.



Note

Please note, that GIMP color management is used to enhance the display of images and the embedding of profiles to image files only. More specifically, the options you choose in this dialog are not used for printing from within GIMP. This is because printing is a special task done by a printing engine that is not part of GIMP.

Color Managed Display

Monitor profile

- None: GIMP uses the colorimetric profile of your monitor.
- Select color profile from disk: choose a profile that you have available on your computer.
- Try to use the system monitor profile: When enabled, GIMP will try to use the display color profile supplied by the system. The configured monitor profile is then only used as a fallback.

Rendering intent

This option is about how colors are converted from the color space of your image to your display device. Four modes are available: "Perceptual", "Relative colorimetric", "Saturation" and "Absolute colorimetric".

Relative colorimetric is usually the best choice (default). Unless you use a LUT monitor profile (most monitor profiles are matrix), choosing perceptual intent actually gives you relative colorimetric. See also Rendering Intent.

Use black point compensation

This option is checked by default. Do use black point compensation unless you have a reason not to.

Optimize image display for

Two options: Speed and Precision / Color Fidelity . "Speed" is activated by default. If not, image display might be better at the cost of speed.

Soft-Proofing

Soft-proofing is a mechanism that allows you to see on your screen what printing on paper will look like. More in general, it is soft-proofing from the color space of your image to another color space (printer or other output device).

Optimize soft-proofing for

Two options: Speed and Precision / Color Fidelity . "Speed" is activated by default. If not, soft-proofing might be better at the cost of speed.

Mark out of gamut colors

When this box is checked, the soft-proofing will mark colors that can not be represented in the target color space. On the right there is a color button that you can click to open a color selector to choose the color you want to be used for marking out of gamut colors.

Preferred profiles

RGB profile

Default is "None", which causes the built-in RGB profile to be used. You can select another RGB working space color profile from disk: it will be offered next to the built-in profile when a color profile can be chosen.

Grayscale profile

Default is "None", which causes the built-in Grayscale profile to be used. You can select another Grayscale working space color profile from disk: it will be offered next to the built-in profile when a Grayscale profile can be chosen.

CMYK profile

Default is "None". You can select a CMYK working space color profile from disk to convert RGB to CMYK.

Policies

File Open Behavior

Default is "Ask what to do". You can also select "Keep embedded profile", "Convert to built-in sRGB or grayscale profile", or "Convert to preferred RGB or grayscale profile (defaulting to built-in)" to indicate how to treat embedded color profiles when opening an image file.



Note

For more explanations:

- ICC Profiles are explained in Wikipedia [WKPD-ICC].
- See OpenICC project (<u>IOPENICC</u>) where GIMP and other great names of free infography contribute to.

Some online available color profiles:

- ICC sRGB Workspace: ICCsRGB™ [ICCsRGB]
- Adobe RGB98 Workspace: Adobe RGB (1998)™ [AdobeRGB]
- ECI (European Color Initiative) Profiles: ECI™ [ECI]

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6.3. Debugging







6.5. Image Import and Export

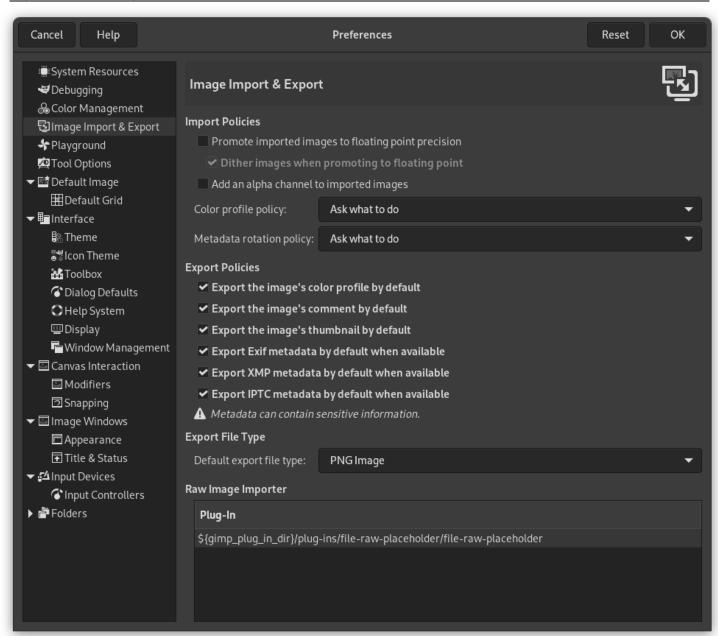
6.5. Image Import and Export





6.5. Image Import and Export

Figure 15.72. Image Import and Export Preferences



This page lets you customize settings related to importing and exporting images.

6.5.1. Activating the Dialog

The preferences dialog can be accessed from the main menu, through Edit \rightarrow Preferences.

6.5.2. Options

Import Policies

Dither images when promoting to floating point

When the previous setting is enabled, this setting allows you to choose whether <u>dithering</u> should be applied when a lower precision image is changed to 32-bit floating point.

Add an alpha channel to imported images

When enabled, an alpha channel is automatically added to any imported image that doesn't have one yet. This can be useful if you usually require an alpha channel to be present for your workflow.

Color profile policy

When importing an image that has a color profile attached to it, you can choose here what action needs to be taken. See <u>File Open Behavior</u> in the Color Management preferences.

Metadata rotation policy

When importing an image that has metadata about the rotation of the image attached to it, you can choose here what action needs to be taken.

- Ask what to do This is the default. Every time you open an image with rotation metadata, a dialog opens that asks you whether to rotate the image
 according to the metadata.
- · Discard metadata without rotating When selecting this, rotation metadata will be ignored when opening an image.
- Rotate the image then discard metadata When selecting this, an image will always be rotated according to the metadata when it is opened. After that is done, the rotation metadata is discarded and replaced by default values for the rotation metadata.

Export Policies



Note

The following export policies define the **default** values when exporting an image. Most formats have image export dialogs where, among other things, you can further adjust the relevant setting for that specific format. These per format settings are remembered across restarts.

Not all image formats support all of the below settings. They are only relevant for image formats that support the setting.

It is good to be aware of the implications of including certain metadata. Metadata can contain sensitive personal information that you may want to review first before deciding to include it or not. Examples are GPS metadata that can show an exact location, or name and address of the creator of the image.

Export the image's color profile by default

When enabled, the default for exporting images is to include the color profile.

Export the image's comment by default

When enabled, the default for exporting images is to include the comment.

Export the image's thumbnail by default

When enabled, the default for exporting images is to include the thumbnail.

Export exif metadata by default when available

When enabled, the default for exporting images is to include exif metadata.

Export XMP metadata by default when available

When enabled, the default for exporting images is to include XMP metadata.

Export IPTC metadata by default when available

When enabled, the default for exporting images is to include IPTC metadata.

Export File Type

Default export file type

This setting allows you to select what file format should be used by default when exporting an image, without explicitly choosing an extension of a known image file format.

Note that this is only relevant when exporting a new image created in GIMP. When exporting an image that was previously imported, GIMP uses the extension of that imported image.

Raw Image Importer

Plug-in

This setting shows a list of known plug-ins that can be used for opening and processing RAW image formats. Most common apps used here are Darktable and RawTherapee. If no plug-in is registered, GIMP will show a placeholder value here.









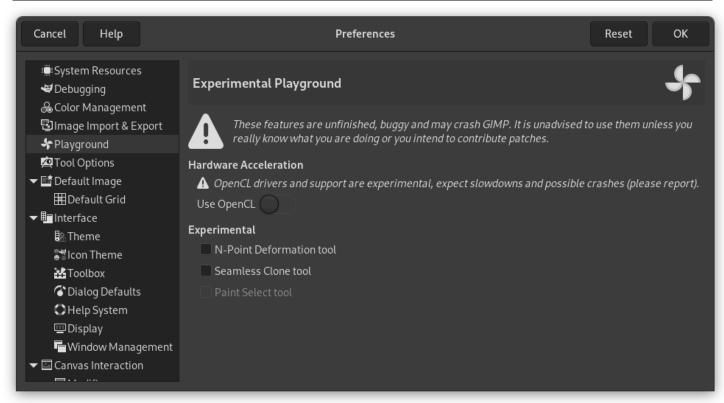
6.6. Experimental Playground

6. Preferences Dialog



6.6. Experimental Playground

Figure 15.73. Experimental Playground Preferences



6.6.1. Activating the Dialog

The preferences dialog can be accessed from the main menu, through $\,$ Edit \rightarrow Preferences.

6.6.2. Options

Hardware Acceleration

The Playground settings are only available if you have explicitly started GIMP with the "--show-playground" command line argument, or if you have previously enabled one of the experimental settings in Playground.

Use OpenCL

OpenCL is an acronym for Open Computing Language (see Wikipedia). This option tries to improve the processing speed of certain operations by using the GPU (graphic processing unit) instead of the CPU.



Warning

This is a very experimental feature that is known to crash often! Only enable this if you intend to work on improving it and don't forget that you enabled it.

Experimental

N-Point Deformation Tool

This tool lets you create a rubber-like deformation of the image using points.

Seamless Clone Tool

This tool lets you seamlessly paste one image into another.

Paint Select Tool

This tool lets you paint over an image to progressively create a selection.



Warning

These are experimental tools that are known to crash, cause slowdowns and not work as expected! Only enable this if you want to test it, or intend

to work on improving it, and don't forget that you enabled it.

+

6.5. Image Import and Export

†

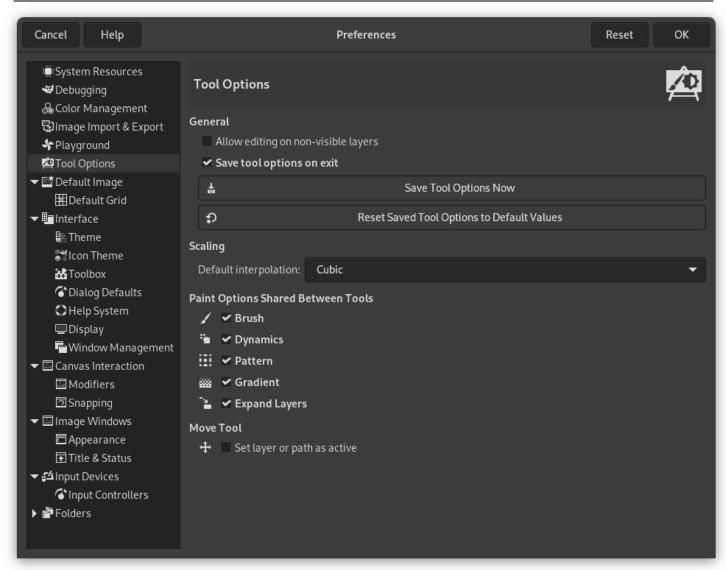
6.7. Tool Options

6.7. Tool Options

♦ 6. Preferences Dialog

6.7. Tool Options

Figure 15.74. Tool Options Preferences



This page lets you customize several aspects of the behavior of tools.

6.7.1. Activating the Dialog

The preferences dialog can be accessed from the main menu, through $\,$ Edit \rightarrow Preferences.

6.7.2. Options

General

Allow editing on non-visible layers

You can edit layers with disabled visibility (the eye icon in the layer dock).

Save tool options on exit

When enabled, the Tool Options of all tools will be saved when closing GIMP.

Save Tool Options Now

This immediately saves the current Tool Options of all tools.

Reset Saved Tool Options To Default Values

This resets the Tool Options of all tools to their default values.

https://docs.gimp.org/3.0/en/gimp-prefs-tool-options.html

3/28/25, 1:28 PM 6.7. Tool Options

Scaling

Default interpolation

When you scale something, each pixel in the result is calculated by <u>interpolating</u> several pixels in the source. This option determines the default interpolation method: it can always be changed, though, in the Interpolation settings of the Transform Tool Options.

The available interpolation methods are described in detail in the <u>Interpolation</u> documentation of the Transform tools.

Paint Options Shared Between Tools

Brush, Dynamics, Pattern, Gradient, Expand Layers

You can decide here whether changing the brush etc for one tool should cause the new item to be used for all tools, or whether each individual tool (pencil, paintbrush, airbrush, etc) should remember the item that was last used for it specifically.

Move Tool

Set layer or path as active

You can decide here whether changing the current layer or path when using the move tool and without pressing any key.



6.6. Experimental Playground



6.8. Default Image Preferences

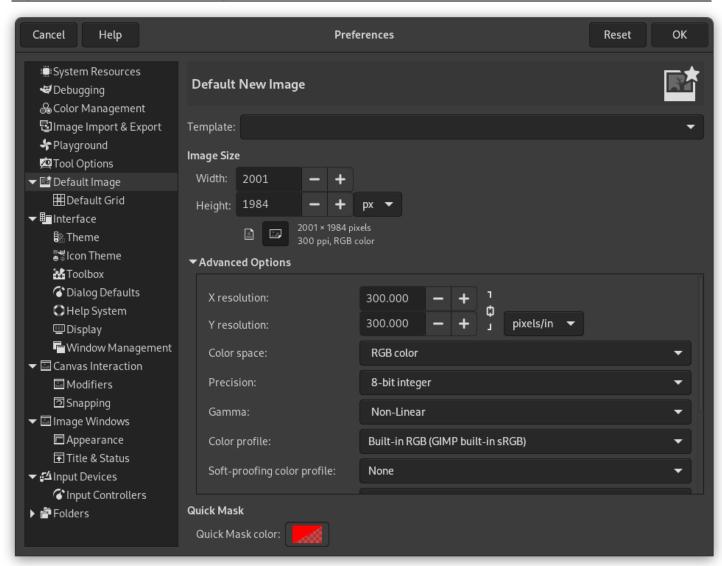
6.8. Default Image Preferences



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6.8. Default Image Preferences

Figure 15.75. Default New Image Preferences



This page lets you customize the default settings for the New Image dialog.

6.8.1. Activating the Dialog

The preferences dialog can be accessed from the main menu, through $\,$ Edit \rightarrow Preferences.

6.8.2. Options

Template, Image Size, Advanced Options

See the New Image Dialog section for an explanation of what each option means.

Quick Mask color

This lets you define the color used to represent the Quick mask selection.







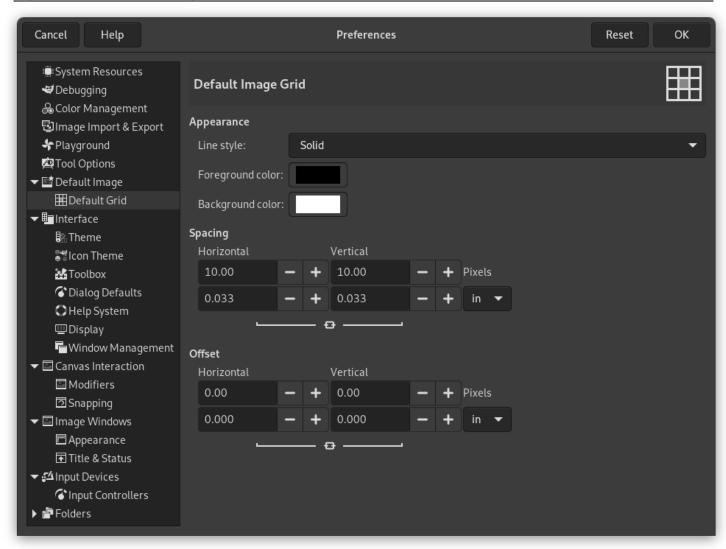
6.9. Default Image Grid





6.9. Default Image Grid

Figure 15.76. Default Image Grid Preferences



This page lets you customize the default properties of GIMP's grid, which can be toggled on or off using View → Show Grid from the main menu.

6.9.1. Activating the Dialog

The preferences dialog can be accessed from the main menu, through Edit \rightarrow Preferences.

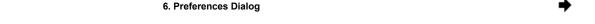
6.9.2. Options

The settings here match those in the Configure Image Grid dialog, which can be used to reconfigure the grid for an existing image, by choosing Image → Configure Grid from the main menu. See the Configure Grid dialog section for information on the meaning of each of the settings.



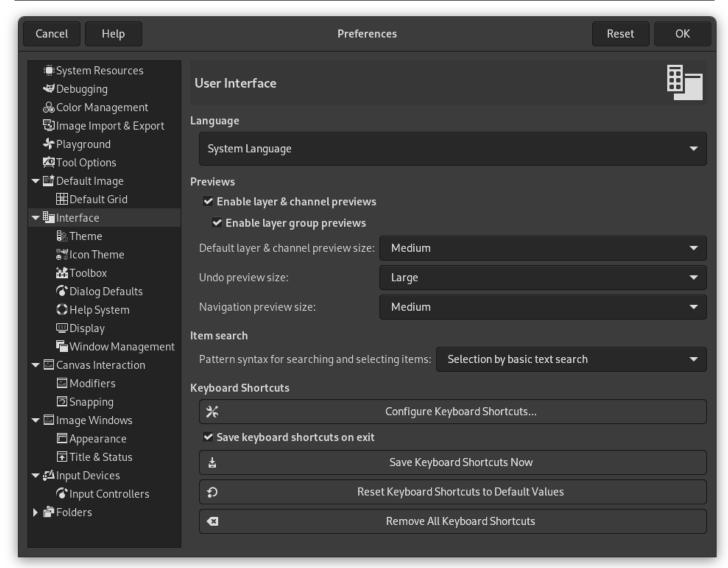
3/28/25, 1:29 PM 6.10. Interface

6.10. Interface



6.10. Interface

Figure 15.77. User Interface Preferences



This page lets you customize language, layer/channel previews and keyboard shortcuts.

6.10.1. Activating the Dialog

The preferences dialog can be accessed from the main menu, through $\,$ Edit \rightarrow Preferences.

6.10.2. Options

Language

GIMP's default language is that of your system. You can select another language in the drop-down list. You have to start GIMP again to make this change effective. Please refer to Section 1.1, "Changing the Language".

Previews

By default, GIMP shows miniature previews of the contents of layers and channels in several places, including the Layers dialog. These preferences allow you to adjust what previews are made and in what size.

Enable layer & channel previews

When enabled, previews are made for each layer and channel in the Layers and Channels dialogs. This is the default. When working with large images, this may slow down GIMP, in which case you could try disabling this setting.

Enable layer group previews

3/28/25, 1:29 PM 6.10. Interface

When enabled and the previous setting is also enabled, previews are also made for layer groups. This is the default. Making previews for layer groups is more time consuming and can have a considerable impact for large images with a lot of layer groups.

Default layer & channel preview size, Undo preview size, Navigation preview size

These settings allow you to select the size of the previews, ranging from Tiny to Gigantic.

Item Search

Pattern syntax for searching and selecting items

The Search layers feature in the Layers Dialog allows you to search for and select layers. You can select your preferred search syntax using this setting.

- Selection by basic text search: This performs a search for the exact text you entered. This is the default.
- Selection by regular expression search: This performs a search by interpreting the text you entered as a regular expression. The syntax of the regular expressions should follow the PCRE syntax.
- Selection by glob pattern search: This performs a search by interpreting the text you entered as a glob pattern. The syntax for glob patterns can be found on wikipedia.

Keyboard Shortcuts

Configure Keyboard Shortcuts...

This button opens the Keyboard Shortcuts Dialog, which allows you to see all actions and assign or change their keyboard shortcuts.

Save keyboard shortcuts on exit

When enabled (default) the keyboard shortcuts are saved every time you exit GIMP.

Save Keyboard Shortcuts Now

This immediately saves the keyboard shortcuts. This can be useful when you have disabled Save keyboard shortcuts on exit.

Reset Keyboard Shortcuts to Default Values

This restores the original keyboard shortcuts as defined by GIMP.

Remove All Keyboard Shortcuts

This removes all keyboard shortcuts from GIMP.







6.9. Default Image Grid

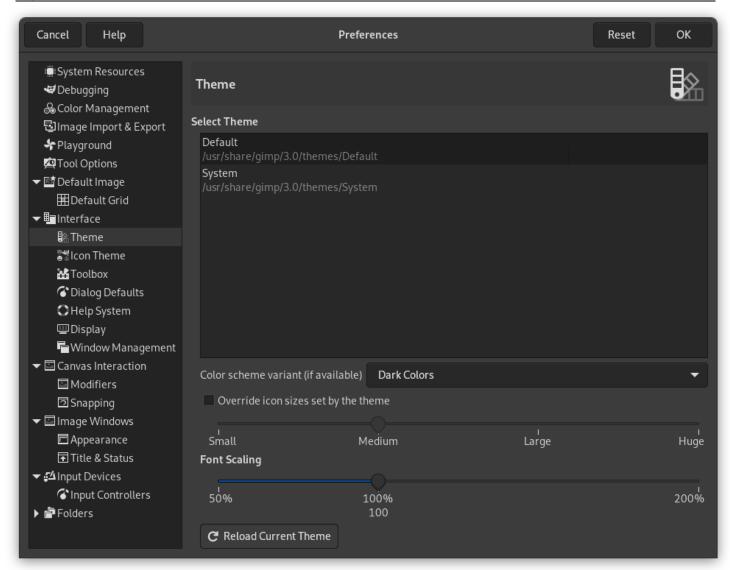
3/28/25, 1:29 PM 6.11. Theme

6.11. Theme

6. Preferences Dialog



Figure 15.78. Theme Preferences



6.11.1. Activating the Dialog

The preferences dialog can be accessed from the main menu, through $\; \mathsf{Edit} \to \mathsf{Preferences}. \;$

6.11.2. Options

Select Theme

List of available Themes

This list shows all themes known to GIMP. The highlighted theme is the one that is currently active. To see what another theme looks like, click on one of the themes in the list. It will update the interface using the chosen theme as a preview.

Color scheme variant (if available)

This lists the color scheme variants known to the selected theme. The themes that come with GIMP have three variants: Light Colors, Middle Gray, and Dark Colors. Third-party themes may have other variants, or no variants at all.

Override icon sizes set by the theme

Each theme sets the sizes of icons used by GIMP. Enable this setting to override the size set by the theme, and then adjust the size slider below it, which can be set to values from Small to Huge.

3/28/25, 1:29 PM 6.11. Theme

Font Scaling
This setting allows you to change the font sizes used in GIMP's interface. It can be adjusted in the range from 50% to 200%.

Reload Current Theme
Clicking this button reloads the current theme.



6.10. Interface

6.12. Icon Theme

3/28/25, 1:30 PM 6.12. Icon Theme

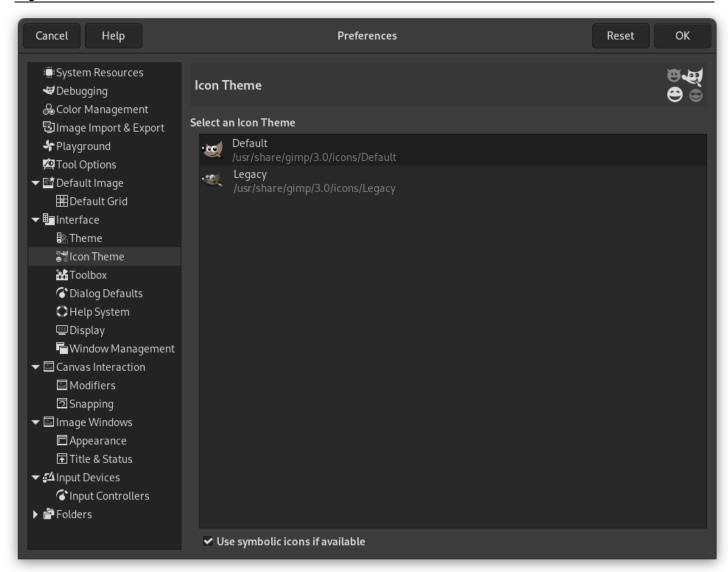
6.12. Icon Theme

6. Preferences Dialog



6.12. Icon Theme

Figure 15.79. Icon Theme Preferences



This page lets you select a theme for the icons of the GIMP user interface. Test them: you will see the result instantly in this preference dialog.

6.12.1. Activating the Dialog

The preferences dialog can be accessed from the main menu, through $\,$ Edit \rightarrow Preferences.

6.12.2. Options

Select an Icon Theme

List of available Icon Themes

This list shows all icon themes known to GIMP. The highlighted icon theme is the one that is currently active. An icon theme defines the look of all the icons used in GIMP's user interface. To see what another icon theme looks like, click on one of the themes in the list. It will update the interface using the chosen theme as a preview.

Use symbolic icons if available

Some icon themes have two variants: symbolic and non-symbolic, which usually means colored icons. This preference allows you to select whether you prefer the symbolic variant if symbolic icons are available.

3/28/25, 1:30 PM 6.12. Icon Theme



6.11. Theme

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6.13. Toolbox

3/28/25, 1:30 PM 6.13. Toolbox

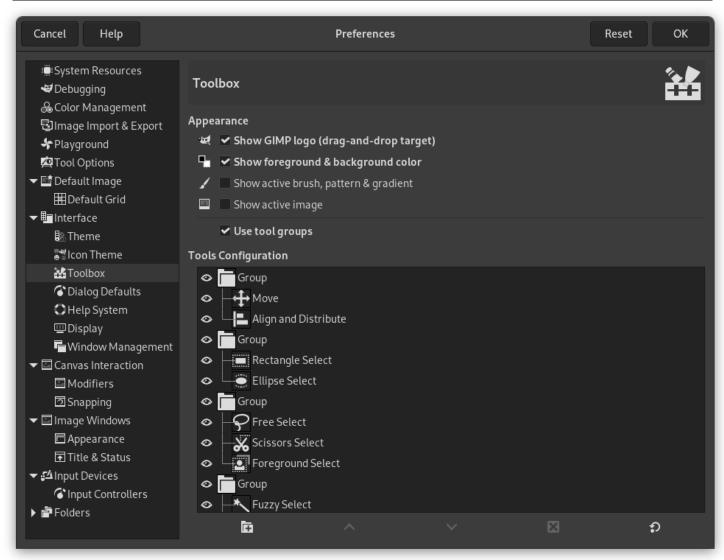
6.13. Toolbox

6. Preferences Dialog



6.13. Toolbox

Figure 15.80. Toolbox Preferences



This page lets you customize the appearance of the Toolbox, by deciding whether the three "context information" areas should be shown at the bottom.

6.13.1. Activating the Dialog

The preferences dialog can be accessed from the main menu, through $\, \, \text{Edit} \to \text{Preferences}. \,$

6.13.2. Options

Figure 15.81. Default Toolbox appearance

3/28/25, 1:30 PM 6.13. Toolbox



Appearance

Show GIMP logo (drag-and-drop target)

You can click-drag-and-drop an image from a file browser into this area (1) or into the tool icons (2) to open it.

Show foreground & background color

Controls whether the color area on the left (3) appears in the Toolbox.

Show active brush, pattern & gradient

Controls whether the area in the center (4), with the brush, pattern, and gradient icons, appears in the Toolbox.

Show active image

Controls whether a preview of the currently active image appears on the right (5).

Use tool groups

By default, tools (2) in the toolbox are grouped together to save space. A different tool in a group can be selected by hovering or long-clicking on a group. When you prefer to have all tools available directly, instead of in groups, disable this setting. See also Section 1.2, "Tool Icons".

Tools configuration

In this list, tools with an eye are present in the Toolbox. Tools that have no eye can be added to the Toolbox by clicking the corresponding checkbox. By default, tools are grouped. You can:

- Move groups by using drag-and-drop or the arrow buttons at the bottom of the dialog.
- Create a new group by using the Create a new tool group at the bottom of the dialog. This tool group is created empty.

Changes take effect immediately.



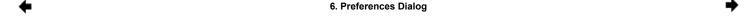
6.12. Icon Theme





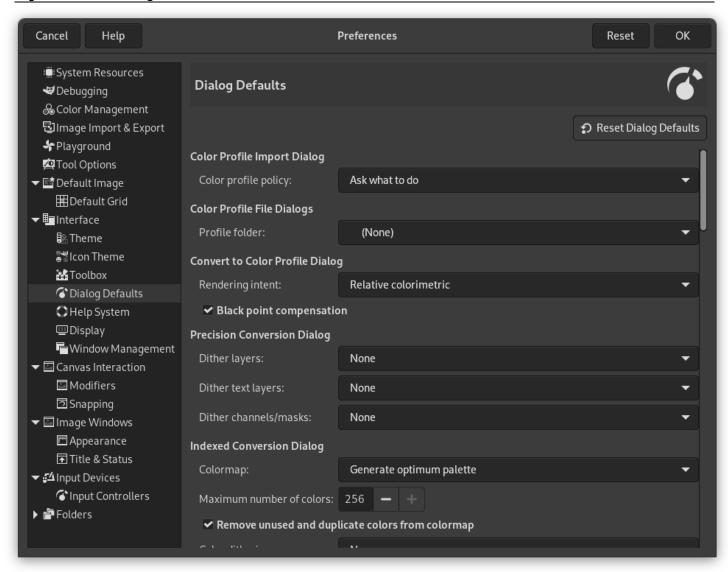
3/28/25, 1:30 PM 6.14. Dialog Defaults

6.14. Dialog Defaults



6.14. Dialog Defaults

Figure 15.82. Dialog Defaults Preferences



This page lets you customize the default parameters of dialogs.

6.14.1. Activating the Dialog

The preferences dialog can be accessed from the main menu, through $\, \, \text{Edit} \, \to \text{Preferences}.$

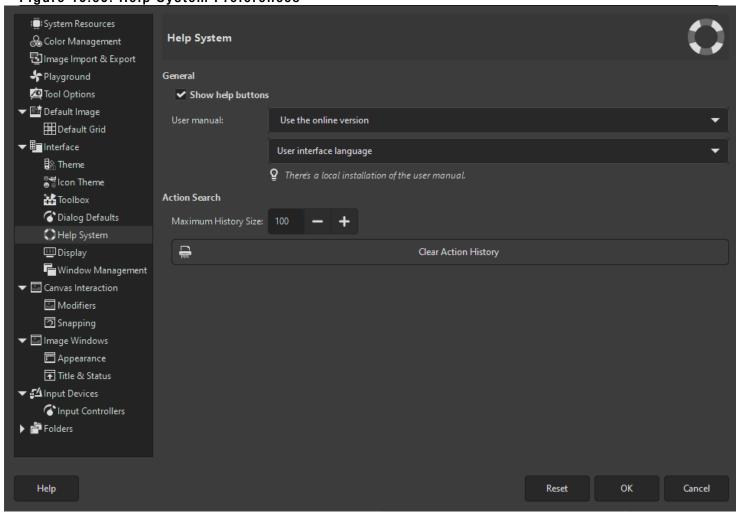


3/28/25, 1:31 PM 6.15. Help System

6.15. Help System
6. Preferences Dialog

6.15. Help System

Figure 15.83. Help System Preferences



This page lets you customize the behavior of the GIMP help system.

6.15.1. Activating the Dialog

The preferences dialog can be accessed from the main menu, through $\,$ Edit \rightarrow Preferences.

6.15.2. Options

General

Show help buttons

This option controls whether the help buttons are shown on every dialog. These buttons can be used to invoke the help system.

Even if the help button is not visible, you can still access help from anywhere in GIMP by pressing F1

User manual

This drop-down list lets you select between Use a locally installed copy and Use the online version.

If one or more manuals are installed locally on your system, then a second drop-down list will be visible where you can select which manual you want to use.

Note

3/28/25, 1:31 PM 6.15. Help System

> The GIMP User Manual needs to be installed separately. You can download the manuals and view the online help at docs.gimp.org. If your internet connection allows it, it is recommended to use the online help since it usually is more up-to-date. The online help is updated once a day, while the offline manual only gets updated once in a while.

Action Search

Maximum History Size
Default value is 100 (0-1000) items in the history.

This will remove all previous help searches from the history list.





6.16. Display

6.14. Dialog Defaults

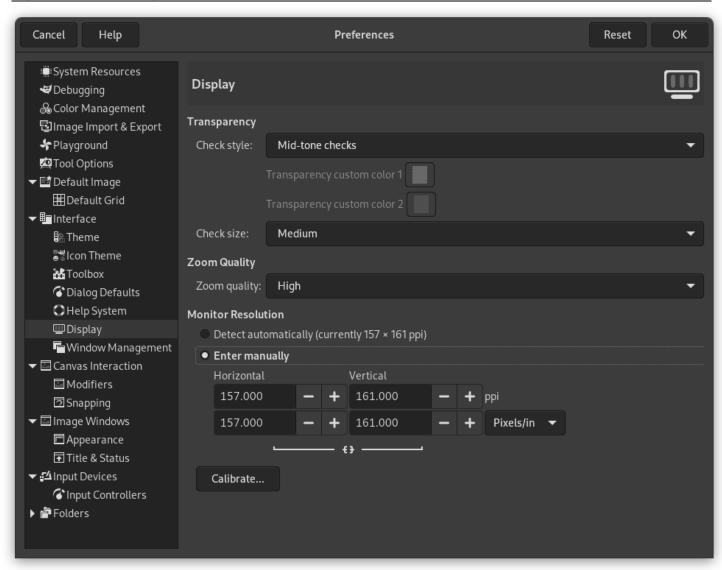
3/29/25, 4:32 AM 6.16. Display

6.16. Display



6.16. Display

Figure 15.84. Display Preferences



This page lets you customize the way transparent parts of an image are represented, and lets you recalibrate the resolution of your monitor.

6.16.1. Activating the Dialog

The preferences dialog can be accessed from the main menu, through $\,$ Edit \rightarrow Preferences.

6.16.2. Options

Transparency

Check style

By default, GIMP indicates transparency using a checkerboard pattern with mid-tone checks, but you can change this if you want, either to a different type of checkerboard, or to solid black, white, or gray.

If you choose Custom checks, two color selection buttons show up that allow you to set your own preferred colors for the checkerboard.

Check size

Here you can alter the size of the squares in the checkerboard pattern used to indicate transparency.

3/29/25, 4:32 AM 6.16. Display

Zoom Quality

Zoom Quality

When zooming out on large images feels sluggish, you can change this setting from High quality to Low. This can improve the speed of displaying the zoomed-out image, at the cost of lowering the quality of the display.

Monitor Resolution

Monitor Resolution is the ratio of pixels, horizontally and vertically, to inches. You have three options:

Detect automatically

Get the monitor resolution from the windowing system (easiest, probably inaccurate)

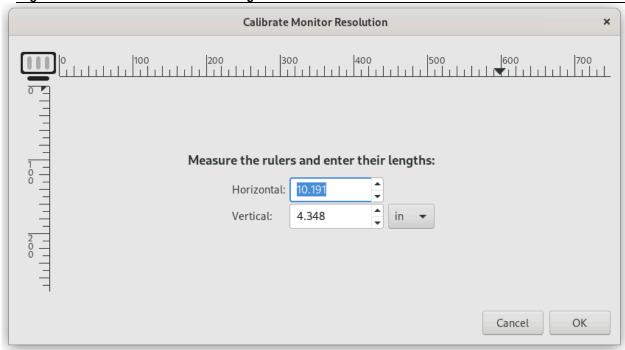
Enter Manually

Enter the data manually

Calibrate..

Push the Calibrate... button to get the Calibrate Dialog.

Figure 15.85. The Calibrate Dialog



Some monitors can be impressively off. You will need a soft ruler.



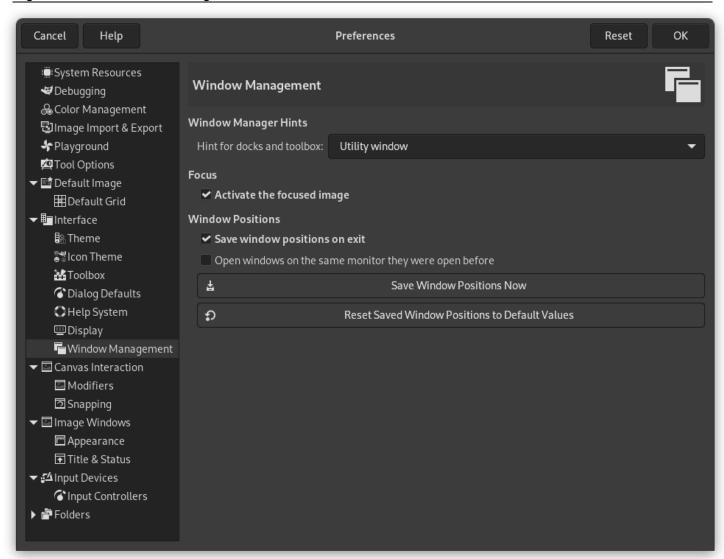
6.17. Window Management

6. Preferences Dialog



6.17. Window Management

Figure 15.86. Window Management Preferences



This page lets you customize the way windows are handled in GIMP. You should note that GIMP does not manipulate windows directly, instead it sends requests to the window manager (i.e., to Windows if you are running in Windows; to Mutter if you are running in a standard GNOME setup in Linux; etc). Because there are many window managers, and not all of them are well behaved, it cannot be guaranteed that the functions described here will actually work as described. However, if you are using a modern, standards-compliant window manager, they ought to.

6.17.1. Activating the Dialog

The preferences dialog can be accessed from the main menu, through $\, \, \text{Edit} \to \text{Preferences}. \,$

6.17.2. Options

Window Manager Hints

Hint for docks and toolbox

The choices you make here determine how the Toolbox, and the docks that hold dialogs, will be treated. You have three possibilities for them:

- If you choose Normal Window, they will be treated like any other windows.
- If you choose Utility Window, the reduce button in the title bar is absent and the docks will remain permanently on your screen.

Figure 15.87. Utility window title bar



If you choose Keep above, they will be kept in front of every other window at all times.

Note that changes you make here will not take effect until the next time you start GIMP.

Focus

Activate the focused image

Normally, when you focus an image window (usually indicated by a change in the color of the frame), it becomes the "active image" for GIMP, and therefore the target for any image-related actions you perform. Some people, though, prefer to set up their window managers such that any window entered by the pointer is automatically focused. If you do this, you may find that it is inconvenient for focused images to automatically become active, and may be happier if you uncheck this option.

Window Positions

Save window positions on exit

If this option is checked, the next time you start GIMP, you will see the same set of dialog windows, in the same positions they occupied when you last exited.

Open windows on the same monitor they were open before

When enabled, GIMP will try to restore windows on the same monitor they were used previously. When disabled, windows will appear on the currently used monitor.

Save Window Positions Now

This button is only useful if "Save window positions on exit" is unchecked. It allows you to set up your windows they way you like, click the button, and then have them come up in that arrangement each time you start GIMP.

Reset Saved Window Positions to Default Values

If you decide that you are unhappy with the arrangement of windows you have saved, and would rather go back to the default arrangement than spend time moving them around, you can do so by pressing this button.

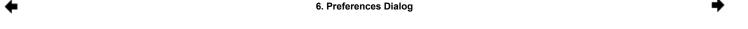


6.16. Display



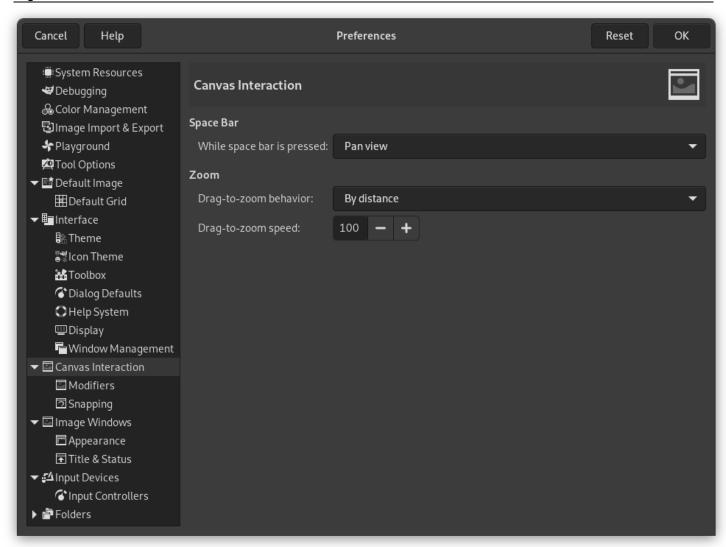
6.18. Canvas Interaction

6.18. Canvas Interaction



6.18. Canvas Interaction

Figure 15.88. Canvas Interaction Preferences



This page lets you customize aspects of the behavior when interacting with the canvas.

6.18.1. Activating the Dialog

The preferences dialog can be accessed from the main menu, through Edit \rightarrow Preferences.

6.18.2. Options

Space Bar

While space bar is pressed

- Pan view (default) or
- Toggle to Move Tool
- No action

Zoom

Drag-to-zoom behavior

3/29/25, 4:54 AM 6.18. Canvas Interaction

This setting decides how zooming with the Zoom tool works. By default, the amount of zooming is By distance. The farther you drag the zoom rectangle, the larger the amount of zooming.

You can also choose for zooming By duration . In this case, the amount of zooming depends on the time spent dragging.

Drag-to-zoom speed

This adjusts the rate at which dragging the mouse will zoom the canvas, as a percentage.



6.17. Window Management





6.19. Canvas Interaction Modifiers

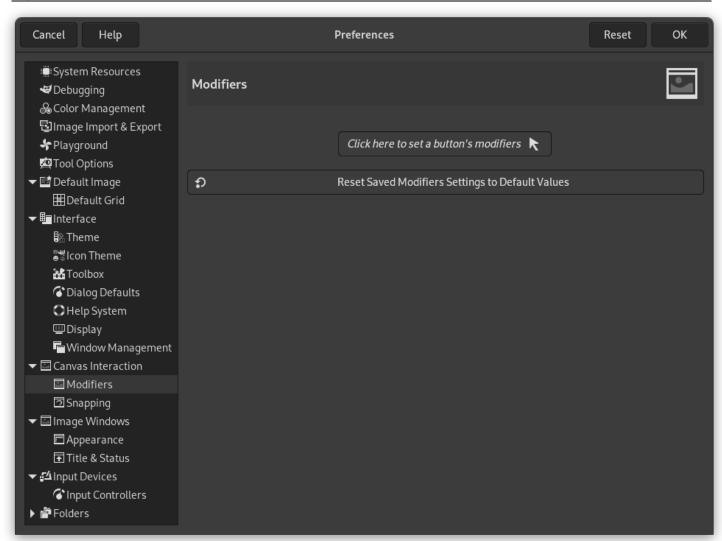
6.19. Canvas Interaction Modifiers





6.19. Canvas Interaction Modifiers

Figure 15.89. Modifiers Preferences



This page allows you to change the key modifiers for any of the available buttons of your input devices (mouse, stylus, etc.), except for the primary button. This can be used to change the actions performed on the canvas when a certain button in combination with a key modifier is pressed.

6.19.1. Activating the Dialog

The preferences dialog can be accessed from the main menu, through $\, \, \text{Edit} \to \text{Preferences}. \,$

6.19.2. Options

Modifiers

Click here to set a button's modifiers

Clicking on this button with one of the buttons of your input devices (except the primary button) allows you to change the command that each modifier for that button performs when used.

When clicked, it shows a list of the current commands assigned to each of the modifiers for the button you clicked. Only the modifiers that have commands attached to them will be shown. You can add a new item to the list by clicking the button below the list, or remove a modifier that you don't need by clicking the button to the right of each item.

To change what a modifier does, click on the list, which will show you all available choices. To change the modifier that performs a command click on the modifier column on the left and press the modifier or modifiers that you would like to use. Multiple modifiers are allowed, e.g. Shift+Ctrl+middle mouse button (shown as button 2 of System Aggregated Pointer), is by default attached to Rotate View by 15 degree steps.

Reset Saved Modifiers Settings to Default Values
Clicking this button resets all modifiers for your input devices to their default values.



6.18. Canvas Interaction





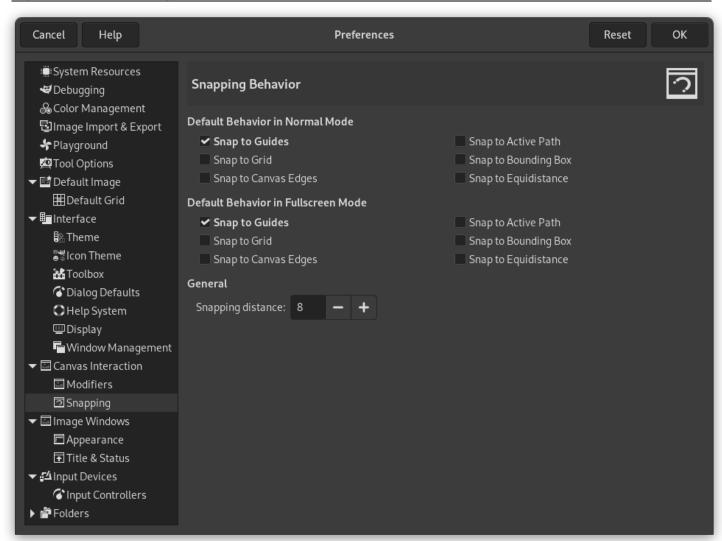
6.20. Canvas Interaction Snapping Behavior

6. Preferences Dialog

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6.20. Canvas Interaction Snapping Behavior

Figure 15.90. Snapping Behavior Preferences



This page allows you to customize the default settings for snapping in an image. These settings can be set separately for working in normal mode and in fullscreen mode.

All settings in this section can be overridden by the commands in the $\underline{\mbox{View menu}}.$

6.20.1. Activating the Dialog

The preferences dialog can be accessed from the main menu, through Edit \rightarrow Preferences.

6.20.2. Options

The following snap settings can be adjusted. We link to the documentation in the View menu for details about each setting.

- <u>Snap to Guides</u>. This is the only type of snapping enabled by default.
- Snap to Grid.
- Snap to Canvas Edges.
- Snap to Active Path.
- Snap to Bounding Box
- Snap to Equidistance.

Snapping distance is the activation distance of snapping, in pixels. That is, how close an object needs to be for snapping to happen. The default value is 8 pixels, allowed values are in the range of 1-255.



6.19. Canvas Interaction Modifiers

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6.21. Image Windows

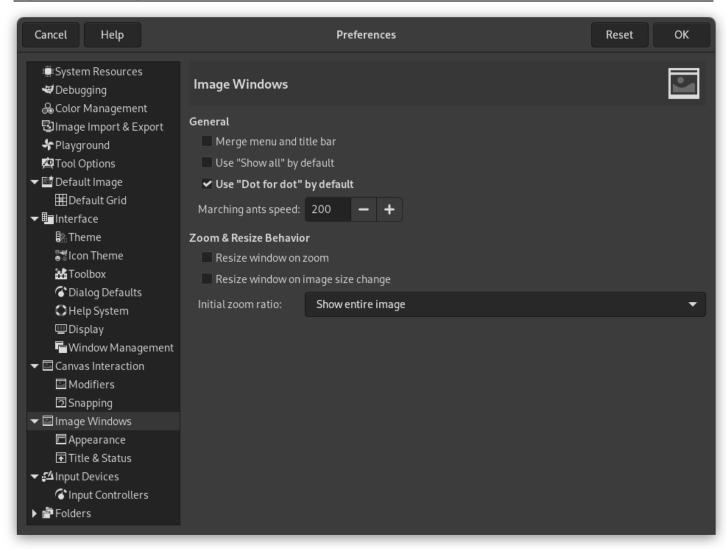
6.21. Image Windows





6.21. Image Windows

Figure 15.91. Image Windows Preferences



This page lets you customize several aspects of the behavior of image windows.

6.21.1. Activating the Dialog

The preferences dialog can be accessed from the main menu, through $\,$ Edit \rightarrow Preferences.

6.21.2. Options

General

Merge menu and titlebar

When enabled the titlebar and the menu will be shown together in one bar. This can be useful to save some vertical space on your screen. This requires a restart before it takes effect.

Use "Show all" by default

This sets the default behavior for Show all option. When opening a new image the setting here will be applied, and can then be overridden from the View menu when needed.

Use "Dot for dot" by default

Using "Dot for dot" means that at 1:1 zoom, each pixel in the image is scaled to one pixel on the display. If "Dot for dot" is not used, the size is determined by the X and Y resolution of the displayed image. See the Scale Image section for more information.

Marching ants speed

When you create a selection, the edge of it is shown as a dashed line with dashes that appear to move, marching slowly along the boundary: they are jokingly called "marching ants". The smaller the value entered here, the faster the ants march.

Zoom and Resize Behavior

Resize window on zoom

This setting only affects Multi-window mode.

If this option is checked, then each time you zoom the image, the image window will automatically resize to follow it. Otherwise, the image window will maintain the same size when you zoom the image.

Resize window on image size change

This setting only affects Multi-window mode.

If this option is checked, then each time you change the size of the image, by cropping or resizing it, the image window will automatically resize to follow. Otherwise, the image window will maintain the same size.

Initial zoom ratio

You can choose either to have images, when they are first opened, scaled so that the whole image fits comfortably on your display, or else shown at 1:1 zoom. If you choose the second option, and the image is too large to fit on your display, then the image window will show only part of it (but you will be able to scroll to other parts).



6.20. Canvas Interaction Snapping Behavior



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6.22. Image Window Appearance

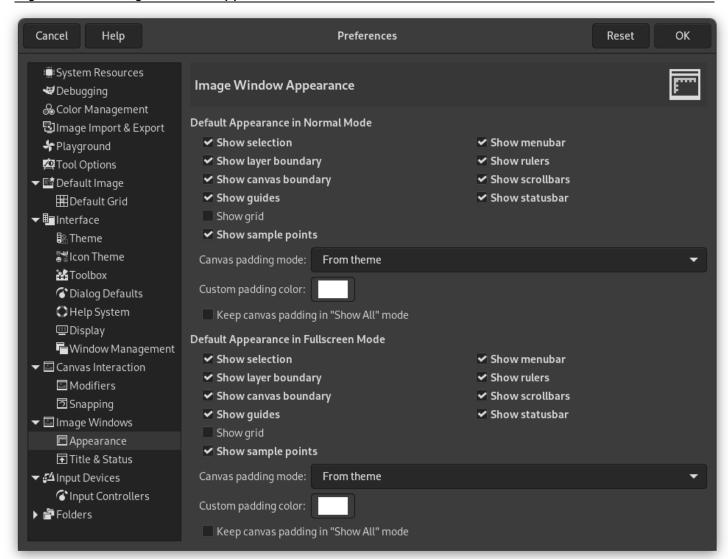
6.22. Image Window Appearance

6. Preferences Dialog



6.22. Image Window Appearance

Figure 15.92. Image Window Appearance Preferences



This page lets you customize the default appearance of image windows, for normal mode and for fullscreen mode. All settings in this section can be overridden by the commands in the <u>View menu</u>.

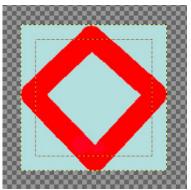
6.22.1. Activating the Dialog

The preferences dialog can be accessed from the main menu, through Edit → Preferences.

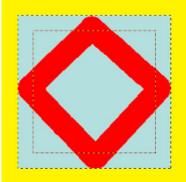
6.22.2. Options

The only parts that may need further explanation are the ones related to padding. "Padding" is the color shown around the edges of the image. You can choose among four colors for the padding color: to use the color specified by the current theme; to use the light or dark colors specified for checks, such as represent transparent parts of the image; or to use a custom color, which can be set using the color button for "Custom padding color". Keep canvas padding in "Show All" mode: in this mode (Section 5.3, "Show All"), you can see pixels outside the canvas. When this option is not checked, the area outside the canvas is filled with a checkerboard pattern, even if you have selected a custom padding color. When the option is checked, the canvas has the custom padding color.

Figure 15.93. Example



Padding color is yellow. "Keep canvas padding" is not checked.



Padding color is yellow. "Keep canvas padding" is checked.



6.21. Image Windows

Report a bug in GIMP Report a documentation error





6.23. Image Title and Statusbar Format

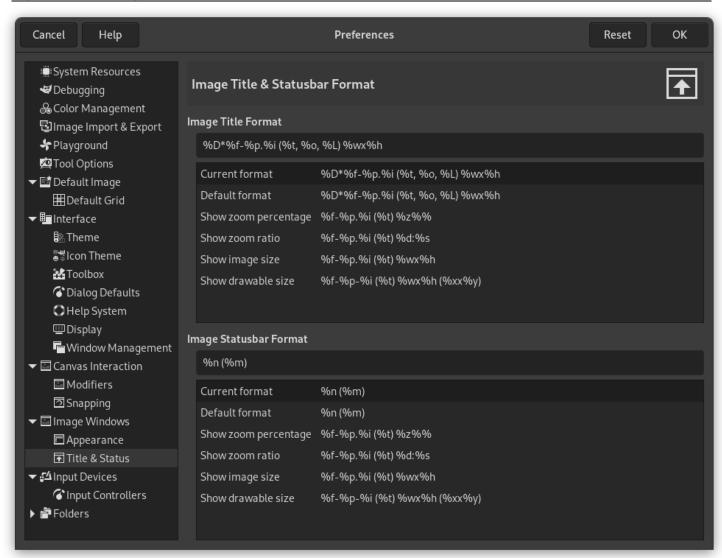
6.23. Image Title and Statusbar Format

6. Preferences Dialog



6.23. Image Title and Statusbar Format

Figure 15.94. Image Title and Statusbar Format Preferences



6.23.1. Activating the Dialog

The preferences dialog can be accessed from the main menu, through Edit \rightarrow Preferences.

6.23.2. Choosing a Format

You can choose among several predesigned formats, or you can create one of your own, by writing a *format string* in the entry area. Here is how to understand a format string: anything you type is shown exactly as you type it, with the exception of *variables*, whose names all begin with "%". Here is a list of the variables you can use:

Variable	e Meaning
%f	Bare filename of the image, or "Untitled"
%F	Full path to file, or "Untitled"
%p	Image id number (this is unique)

%i View number, if an image has more than one display

Variable	Meaning
%t	Image type (RGB, grayscale, indexed)
%z	Zoom factor as a percentage
%s	Source scale factor (zoom level = %d/%s)
%d	Destination scale factor (zoom level = %d/%s)
%Dx	Expands to x if the image is dirty, nothing otherwise
%Cx	Expands to x if the image is clean, nothing otherwise
%I	The number of layers
%L	Number of layers (long form)
%m	Memory used by the image
%n	Name of the active layer/channel
%o	Name of the color profile
%P	id of the active layer/channel
%w	Image width in pixels
%W	Image width in real-world units
%h	Image height in pixels
%H	Image height in real-world units
%u	Unit symbol (eg. px for Pixel)
%U	Unit abbreviation
%x	Active layer width in pixels
%X	Active layer width in real-world units
%y	Active layer height in pixels
%Y	Active layer height in real-world units
%%	A literal "%" symbol





6.24. Input Devices

6.22. Image Window Appearance

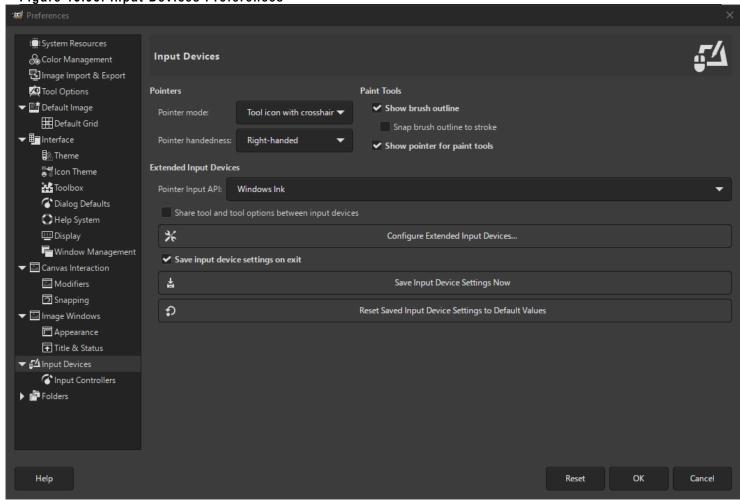
6.24. Input Devices





6.24. Input Devices

Figure 15.95. Input Devices Preferences



6.24.1. Activating the Dialog

The preferences dialog can be accessed from the main menu, through Edit \rightarrow Preferences.

6.24.2. Options

Pointers and Paint Tools

Pointer mode

This option has no effect unless Show pointer for paint tools is checked. If it is, you have three choices: Tool icon, which causes a small iconic representation of the currently active tool to be shown beside the cursor; Tool icon with crosshair, which shows the icon as well as a crosshair indicating the center of the cursor; or Crosshair only.

Pointer handedness

This option decides the direction of the pointer. The default is Right-handed. When Left-handed is chosen, the pointer is flipped horizontally.

Show brush outline

If this option is checked, then when you use a paint tool, the outline of the brush will be shown on the image as you move the pointer around. On slow systems, if the brush is very large, this could occasionally cause some lag in GIMP's ability to follow your movements: if so, switching this off might help. Otherwise, you will probably find it quite useful.

Snap brush outline to stroke

This requires Show brush outline to be enabled. When this setting is also enabled, the brush outline will snap to individual dabs when painting. The dabs are where the brush paints on the canvas.

Show pointer for paint tools

If this is checked, a cursor will be shown. This is in addition to the brush outline, if the brush outline is being shown. The type of cursor is determined by the next option.

Extended Input Devices

Pointer Input API

This setting is only present on Windows. On Windows, when you use a touch screen, or a pen to draw on a tablet, there are two ways for GIMP to interact with it. This setting lets you choose which one to use.

In general for newer drawing devices, Windows Ink is the preferred way. If that doesn't work for you, try the older Wintab API.

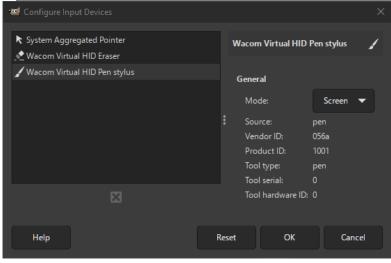
Share tool and tool options between input devices

When enabled, the same tool and tool options will be used for all input devices. No tool switching will occur when the input device changes.

Configure Extended Input Devices

This button opens a dialog that allows you to configure the input devices associated with your computer: tablet, MIDI keyboard, etc. If you have a tablet, you will see a dialog like this:

Figure 15.96. Preferences for a tablet



For each of the input devices you can set its Mode. This decides how GIMP translates the input from the device to your screen. For a mouse this is usually set to disabled and for other devices to Screen.

The only other choice for mode is Window. Currently there don't seem to be any differences with Screen. Unless you know what you are doing, this is better left alone.

Save input device settings on exit

When you check this box, GIMP remembers the tool, color, pattern, and brush you were using the last time you quit.

Save Input Device Settings Now

This immediately saves the current input device settings.

Reset Saved Input Device Settings to Default Values

Report a bug in GIMP Report a documentation error

Delete your settings and restore default settings.







6.25. Input Controllers

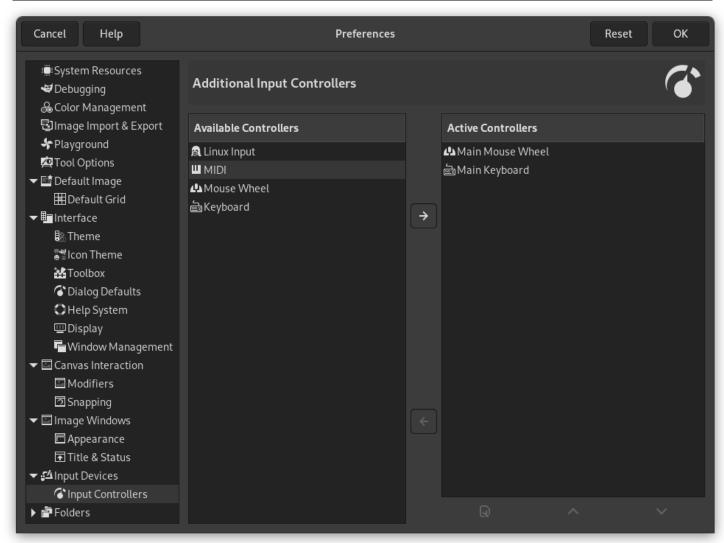
6.25. Input Controllers





6.25. Input Controllers

Figure 15.97. Input Controllers Preferences



This page lets you enable or disable an input device and configure it.

6.25.1. Activating the Dialog

6.25.2. Options

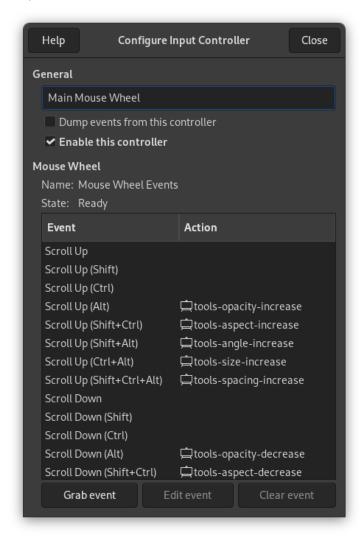
This dialog has two lists of additional input controllers: Available Controllers on the left, Active Controllers on the right. It is used to enable or disable an input device and configure it.

A click on an item will highlight it and you can move the controller from one list to the other by clicking on the respective arrow key. When you try to move a controller from the list of active controllers to the available controllers, a dialog pops up and you will have the choice of removing the controller or just disabling it.

When you double click on a (typically active) controller or alternatively click on the Edit button at the bottom of the list, you can configure this controller in a dialog window:

Main Mouse Wheel

Figure 15.98. Main Mouse Wheel



General

Dump events from this controller

This option must be checked if you want a print on the stdout of the events generated by the enabled controllers. If you want to see those event you should start GIMP from a terminal or making it to print the stdout to file by the shell redirection. The main use of this option is for debug.

Enable this controller

This option must be checked if you want to add a new action to the mouse wheel.

Mouse Wheel Events

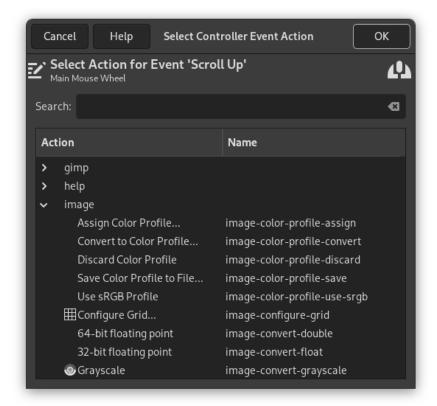
This window shows the available scroll wheel events on the left, and on the right the actions associated to that event. To change or add an action to an event, either double-click or press the Edit event button.

To remove an action, press the Clear event button.

Editing the action assigned to an event

After selecting an event, if you click on the Edit button, or when you double-click, the following dialog is opened:

Figure 15.99. Select Controller Event Action



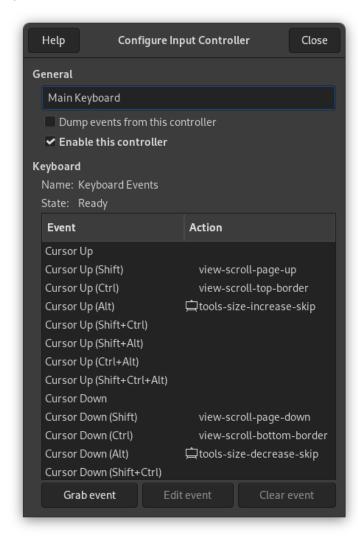
This dialog is similar to the one for editing <u>keyboard shortcuts</u>, except there is no shortcut column.

If an action is already assigned for this event, the dialog will open with that action selected; otherwise it will display the sections with the available action categories. Click on an action to select it and then press OK to confirm you want that action assigned to the selected event.

Main Keyboard

You can use this dialog in the same way as that of the mouse wheel. Events are related to the arrow keys of the keyboard, combined or not with control keys.

Figure 15.100. Main Keyboard





Note

An example of changing the actions assigned to events can be found in the documentation for $\underline{\text{Creating a variable size brush}}.$



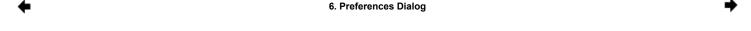
6.24. Input Devices



6.26. Folders

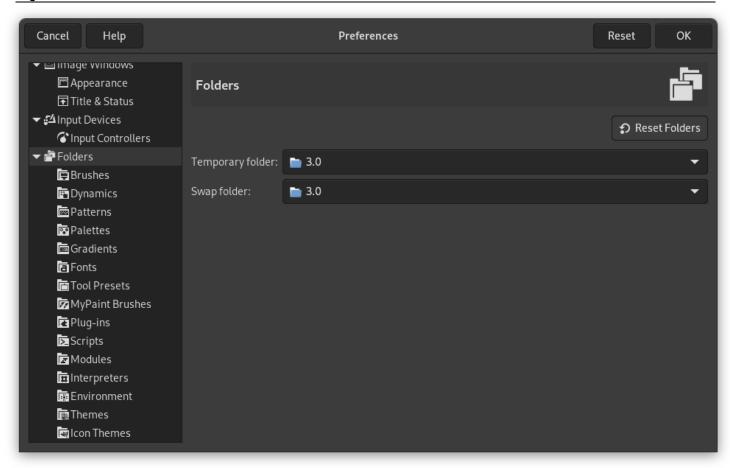
3/29/25, 4:56 AM 6.26. Folders

6.26. Folders



6.26. Folders

Figure 15.101. Folders Preferences



This page allows you to set the locations for two important folders used by GIMP for temporary files. The pages below it allow you to customize the locations searched for resources such as brushes etc.; see Data Folders for a description that applies to them. You can change the folders here by editing the entries, or by pressing the buttons on the right to bring up a file chooser window.

6.26.1. Activating the Dialog

The preferences dialog can be accessed from the main menu, through Edit \rightarrow Preferences.

6.26.2. Options

Temporary folder

This folder is used for temporary files: files created for temporary storage of working data, and then deleted within the same GIMP session. It does not require a lot of space or high performance. By default, a subdirectory called tmp in your personal GIMP directory is used, but if that disk is very cramped for space, or has serious performance issues, you can change it to a different directory. The directory must exist and be writable by you, or bad things will happen.

Swap folder

This is the folder used as a "memory bank" when the total size of images and data open in GIMP exceeds the available RAM. If you work with very large images, or images with many layers, or have many images open at once, GIMP can potentially use a considerable amount of swap space, so available disk space and performance are definitely things to think about for this folder. By default, it is set to your personal GIMP directory, but if you have another disk with more free space, or substantially better performance, you may see a significant benefit from moving your swap folder there. The directory must exist and be writable by you.







6.27. Data Folders

3/29/25, 4:57 AM 6.27. Data Folders

6.27. Data Folders

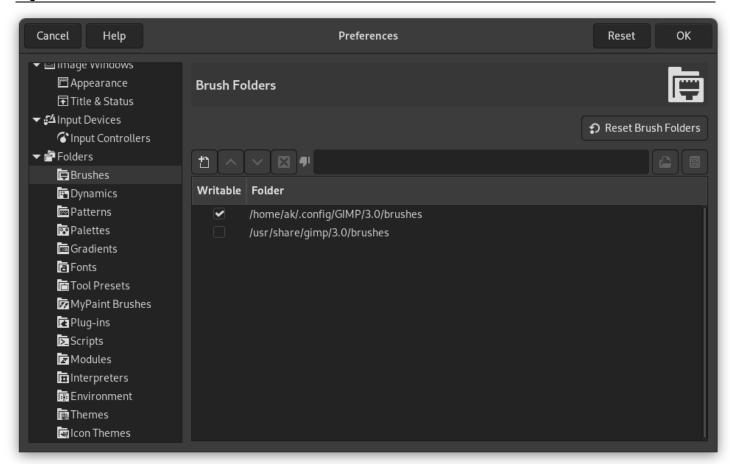
6. Preferences Dialog





6.27. Data Folders

Figure 15.102. Brush Folders Preferences



GIMP uses several types of resources – such as brushes, patterns, gradients, etc. – for which a basic set are supplied by GIMP when it is installed, and others can be created or downloaded by the user. For each such resource type, there is a Preference page that allows you to specify the search path: the set of directories from which items of the type in question are automatically loaded when GIMP starts. These pages all look very much the same: the page for brushes is shown above as an example.

By default, the search path consists of two locations:

System Folder

The system folder includes items that are included with GIMP by default. You should not alter the content in this folder.

Personal Folder

The personal folder is located inside your personal GIMP configuration folder. This is where you should place items added by you. If you cannot save items in this folder, make sure that the personal folder is marked as writable.

GIMP uses the first writable folder in this list to save resources. You can customize the search path by using the buttons at the top of the dialog to move a folder up or down in the list.

6.27.1. Activating the Dialog

The preferences dialog can be accessed from the main menu, through Edit → Preferences.

6.27.2. Options

Select a Folder

If you click on one of the folders in the list, it is selected for whatever action comes next.

Add/Replace Folder

If you type the name of a folder in the entry space, or navigate to it using the file chooser button on the right, and then click the Dutton, this will replace the selected folder with the one you have specified. If nothing in the list is selected, the folder will be added to the list.

The local to do this yourself.

3/29/25, 4:57 AM 6.27. Data Folders

Move Up/Down

If you click on the \wedge or \vee buttons, the selected folder will be changed to the following or preceding one in the list. Since the folders are read in order, using those buttons change the loading precedence of the items located in those folders.

Delete Folder

If you click on the **\times** button, the selected folder will be deleted from the list. Note that the folder itself is not affected; it is merely removed from the search path. Deleting the system folder is probably a bad idea, but nothing prevents you from doing it.

+

6.26. Folders



7. Miscellaneous Dialogs

7. Miscellaneous Dialogs





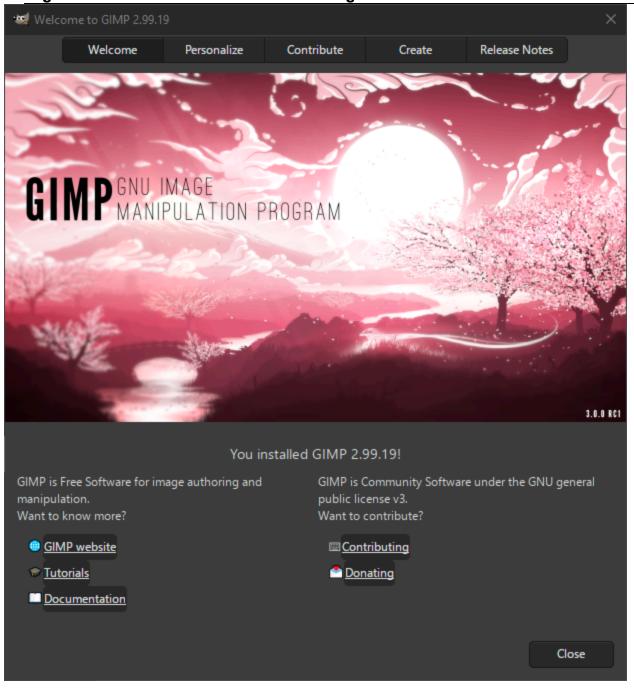


7. Miscellaneous Dialogs

7.1. Welcome Dialog

The "Welcome Dialog" is shown when starting GIMP, unless you have disabled that. After updating to a new version, it will first show the Welcome page. After that first time, it will start with the Create page opened. This allows you to quickly continue with what you were working on before.

Figure 15.103. The Welcome Dialog



7.1.1. Activating the Dialog

You can access it:

• From the main menu: Help → Welcome Dialog.

7.1.2. Using the Welcome Dialog

The Welcome Dialog consists of five pages that you can switch between by clicking on their name at the top of the dialog. The most important ones are Personalize, which allows you to quickly adjust some settings; and Create, to select which images you want to open when starting GIMP.

The following pages are part of the dialog.

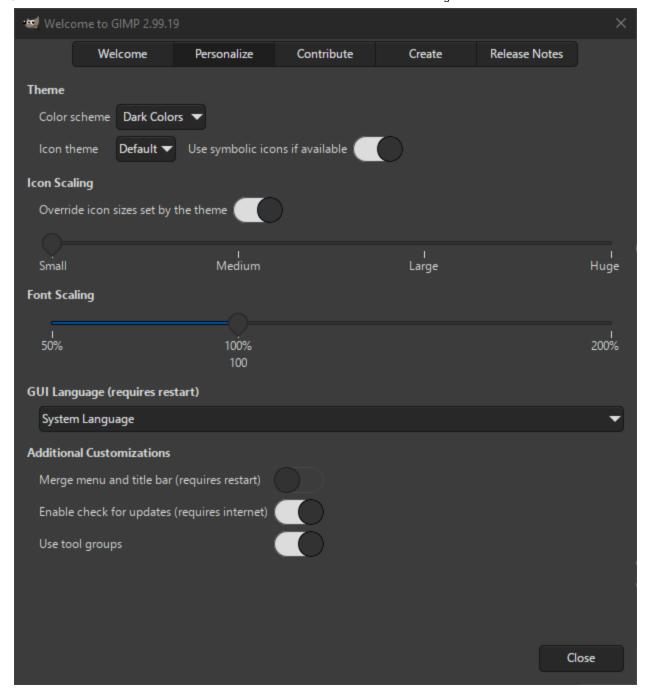
Welcome

This is the first page shown after you have updated your version of GIMP. It shows the exact version that you just installed.

Below it are important links to GIMP's main website, tutorials, documentation, how to contribute, and making donations to support the development of GIMP.

Personalize

Figure 15.104. The Personalize page



The Personalize page gives you quick access to a selection of settings that you may find useful to adjust to your personal preferences. All of these settings can also be accessed from the <u>Preferences Dialog</u>. These settings are divided in several groups, which will be explained below. The settings in the first three groups take effect immediately, which allows you to preview the changes.

Theme

The settings here allow you to adjust the colors and icons used in GIMP to your liking. See also <u>Theme</u> and <u>Icon</u> settings in the Preferences Dialog.

Color scheme

This allows you to choose which color scheme to use for the current theme in GIMP's interface. Our own themes have a choice between Light Colors, Middle Gray, and Dark Colors.

Icon Theme

This allows you to choose which icon theme to use in GIMP's interface. By default, there is a choice between Default and Legacy. The Legacy icons are here for backwards compatibility. They are generally not well suited to higher resolution screens and are only available in a colored variant. If you have installed custom themes, they will show up in this list too.

Use symbolic icons if available

This allows you to choose whether you prefer the symbolic variant of the icon theme (if available). The symbolic version is a grayscale flat variant, while the non-symbolic variant has colored icons. Note that this setting will only take effect if the icon theme supports a symbolic variant.

Icon Scaling

This group allows you to adjust the size of the icons.

Override icon sizes set by theme

Usually each icon theme sets the size of the icons. By enabling this, you can override the size set by the icon theme and adjust it with the setting below.

Icon sizes

This slider allows you to adjust the size of the icons in several steps between small and huge.

Font Scaling

This allows you to adjust the size of the fonts.

Font sizes

This slider allows you to adjust the size of the fonts used in GIMP's interface between 50% and 200%, where 100% is the default size set by the theme.

GUI Language

This drop-down list allows you to select the interface language used in GIMP. Note that this change will only take effect after restarting GIMP.

Additional Customizations

These additional settings allow you to adjust several unrelated preferences.

Merge menu and titlebar

When enabled the titlebar and the menu will be shown together in one bar. This can be useful to save some vertical space on your screen. This requires a restart before it takes effect. See also Image Windows preferences.

Enable check for updates

This requires a working internet connection. When enabled GIMP will regularly check its website to see if a new version is available. If there is, you will be notified, and can decide whether you want to update or not. No personal info is shared with our website.

See also System Resources, Network Access preferences.

Use tool groups

By default, tools in the toolbox are grouped together to save space. A different tool in a group can be selected by hovering or long-clicking on a group. When you prefer to have all tools available directly, instead of in groups, you can disable this setting here.

See also <u>Toolbox</u> preferences.

Contribute

The contribute page has helpful links if you want to report bugs, help improving GIMP's code, translate the interface of GIMP, or if you want to donate money to help with the development of GIMP.

Create

The Create page allows you to quickly open one or more of your last used images, to continue where you left off.

From this page you can also choose to Create a new image, or Open the file dialog to look for a different image. If you just want to open one of your recently used images, you can double-click the image in the list. To open multiple images, select the ones you want in the list, then click the Open Selected Images button below the list. At the bottom of this page you will see the Show On Start setting. By default this page is shown every time you start GIMP. You can disable this by unchecking this option. After that you can always enable it again by opening this dialog from the Help menu and going to the Create page.

Release Notes

This page shows a list of the most important changes in the latest version of GIMP.

The changes that have a triangle icon in front of them can be clicked to show where these changes can be found. Clicking the triangle starts a short animation that highlights the locations in the interface related to the change.







7.2. Tool Presets Dialog

7.2. Tool Presets Dialog



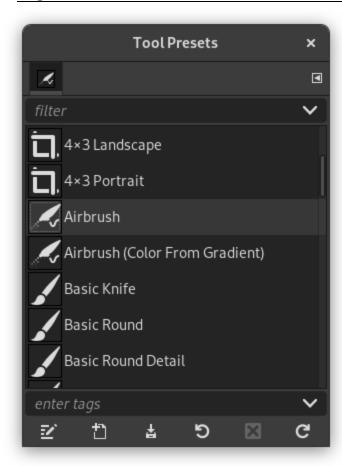
7. Miscellaneous Dialogs



7.2. Tool Presets Dialog

The Tool Presets Dialog shows a list of all saved tool presets. Clicking on a preset opens the corresponding tool with its saved presets.

Figure 15.105. The Tool Presets Dialog



7.2.1. Activating the Dialog

This dialog is a dockable dialog; see the section <u>Section 2.3, "Dialogs and Docking"</u> for help on manipulating it. You can access it:

- from the main menu: Windows → Dockable Dialogs → Tool Presets;
- from the Tab menu in any dockable dialog by clicking the <u>tab menu button</u> and selecting Add Tab → Tool Presets.

7.2.2. Using the Tool Presets Dialog

This dialog comes with a list of predefined presets. Each of them has an icon representing the tool presets will be applied to and a name.

Presets can be tagged so that you can arrange presets display as you want. Please see <u>Section 3.7, "Tagging"</u> for more information about tagging.

Double-clicking on a preset icon opens the Tool Preset Editor.

Double-clicking on preset name allows you to edit this name.

The button bar at the bottom offers the following functionality:

- Edit this tool preset: clicking on this button opens the Tool Preset Editor for the selected preset. The Tool Preset Editor is described in Section 7.3, "Tool Preset Editor".
- Create a new tool preset: before clicking on this button, you can either select an existing preset, or select a tool in Toolbox, for example the Healing Tool which is not in the presets list. A new preset is created at the top of the dialog and the Tool Preset Editor is opened. Please see Section 7.3, "Tool Preset Editor".
- Save the active tool options to this preset: this saves the current tool settings to the selected preset.
- Sestore this tool preset: this restores the tool settings to the values saved in the selected preset.
- Delete this tool preset: this deletes the currently selected preset. Note that this button is disabled for the default presets that come with GIMP.
- C Refresh tool presets: If you have added a preset manually to the Tool Presets folder configured in the Folders Preferences, you have to click on this button to include it in the presets list.

7.2.3. The Tool Presets Dialog Context Menu

Right-clicking on the Presets Dialog opens a context menu where you find some commands already described with buttons: Edit tool preset, New tool preset, Save tool options to preset, Restore tool preset, Refresh tool presets.

Additional commands are:

Duplicate Tool Preset

Duplicate Tool Preset: this command is always disabled. It is not necessary since, as we saw above, a duplicate is automatically created when you create a new preset from an existing preset.

Copy Tool Preset Location

Copy Tool Preset Location allows you to copy the path of the selected tool preset to the clipboard.

Show in File Manager

Show in File Manager opens the location of the tool preset in the default File Manager on your system.







7. Miscellaneous Dialogs

Report a bug in GIMP Report a documentation error

7.3. Tool Preset Editor

3/29/25, 4:57 AM 7.3. Tool Preset Editor

7.3. Tool Preset Editor

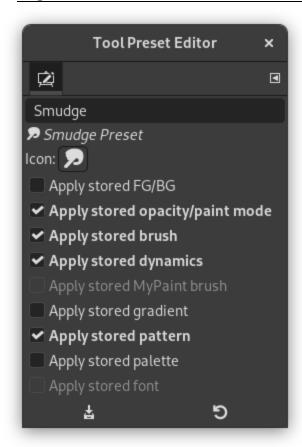


7. Miscellaneous Dialogs



7.3. Tool Preset Editor

Figure 15.106. The Tool Preset Editor



7.3.1. Activating the Dialog

You can access this dialog through:

- a click on the **E** Edit this tool preset button in the button bar of the Tool Presets Dialog.
- a double-click on a preset icon in the Tool Presets Dialog.
- a right-click on a preset in the Tool Presets Dialog to open a context menu and then click on the Edit Tool Preset command.
- a click on the Save Tool Preset... button from the <u>Tool Options Dialog</u>.

7.3.2. Using the Tool Preset Editor

You can edit presets you have created only; all options of predefined presets are disabled. When you save a preset, it is stored in the first writable folder configured under Tool Presets in the <u>Folders Preferences</u>. In this dialog you can:

edit preset name in text box,

- change preset icon by clicking on preset icon. This opens a window where you can choose a new icon.
- select resources to be saved by clicking on check boxes.

The button bar at the bottom offers the following functionality:

- Save the settings of the current tool preset.
- **5** Reset if you want to undo your changes.

7.3.3. Tool Preset Editor Context Menu

The Tool Preset Editor has a context menu that can be reached by clicking the <u>tab menu button</u> ■ and then choosing Tool Preset Editor Menu. Besides two items that do the same as the save and restore buttons mentioned above, it only has one other option.

Edit Active Tool Preset

When enabled, the tool preset editor will automatically load the currently active tool preset. If it is disabled, the tool preset editor will not change when the active tool preset changes.







7.2. Tool Presets Dialog



7.4. Device Status Dialog

7.4. Device Status Dialog

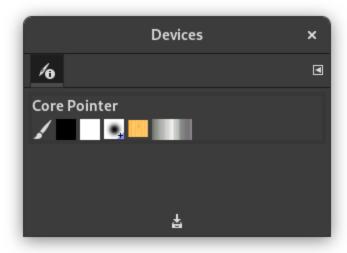


7. Miscellaneous Dialogs



7.4. Device Status Dialog

Figure 15.107. The "Device Status" Dialog



This window gathers together the current options of Toolbox, for each of your input devices: the mouse (named "Core pointer") or either the tablet, if you have one. These options are represented by icons: foreground and background colors, brush, pattern and gradient. Excepted for colors, clicking on an icon opens the window which lets you select another option; the tool-box will be updated when changing. You can drag and drop items to this dialog.

The Save device status button at the bottom of the window performs the same action as the Save Input Device Settings Now button in the Input Devices section of the preferences.

7.4.1. Activating the Dialog

This dialog is a dockable dialog; see the section Section 2.3, "Dialogs and Docking" for help on manipulating it.

- From the main menu: Windows → Dockable Dialogs → Device Status.
- From the Tab menu in any dialog: Add a Dock → Device Status



7.3. Tool Preset Editor







7.5. Error Console

3/29/25, 4:58 AM 7.5. Error Console

7.5. Error Console



7. Miscellaneous Dialogs



7.5. Error Console

The Error console offers more possibilities than the single "GIMP Message". This is a log of all errors occurring while GIMP is running. You can save all this log or only a selected part.

7.5.1. Activating the Dialog

This dialog is a dockable dialog; see the section <u>Section 2.3, "Dialogs and Docking"</u> for help on manipulating it. You can access it:

- from the main menu: Windows → Dockable Dialogs → Error Console;
- from the Tab menu in any dockable dialog by clicking the <u>tab menu button</u> and selecting Add Tab → Error Console.

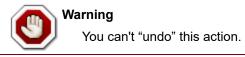
7.5.2. The "Error Console" Dialog

Figure 15.108. "Error Console" Dialog window



Clear errors

This button lets you delete all errors in the log.



Save all errors

This button lets you save the error log to a file. A dialog window lets you choose the name and the destination directory of the error log file. See <u>Section 5.3, "Save File"</u> for more information on saving files.

You can also select a part of the log (by click-and-dragging the mouse pointer or by using the **Shift** key while pressing the button.

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Tip

You will as well find these button actions in the dialog tab menu by clicking on \blacksquare , or in the context menu you get by right-clicking on the dialog window.

7.5.3. The "Error Console" context menu

Besides the functions mentioned above using the buttons, the context menu has the following additional actions. You can access the context menu by right clicking in the error console.

Select All

This command allows you to select all the messages in the log.

Highlight

This command allows you to change which kind of messages will highlight the error console. You can enable or disable the following three kinds of messages: Errors, Warnings, and Messages.







7.4. Device Status Dialog



7.6. Dashboard

3/29/25, 4:58 AM 7.6. Dashboard

7.6. Dashboard



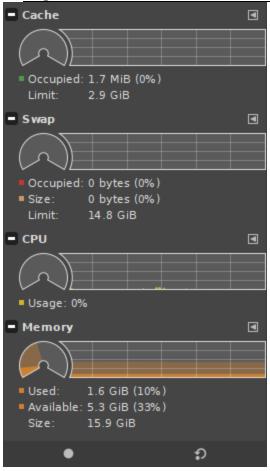
7. Miscellaneous Dialogs



7.6. Dashboard

The Dashboard helps to monitor GIMP resource usage (Cache, Swap, CPU, Memory). This allows you to make more educated decisions about various configuration options, especially <u>System Resources</u>. It is also used by developers.

Figure 15.109. The Dashboard Dialog window



7.6.1. Activating the Dialog

This dialog is a dockable dialog; see the section <u>Section 2.3, "Dialogs and Docking"</u> for help on manipulating it. You can access it:

- from the main menu: Windows → Dockable Dialogs → Dashboard;
- from the Tab menu in any dockable dialog by clicking the <u>tab menu button</u> and selecting Add Tab → Dashboard.

7.6.2. Using the Dashboard

The Dashboard consists of five groups that you can monitor: Cache usage, Swap usage, CPU usage, Memory usage, and Misc information. By default the Misc group is hidden and the CPU and Memory groups are collapsed.

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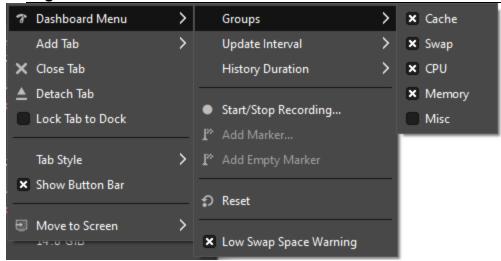
Each group has a separate Tab menu where you can change settings related to that group.

At the bottom of the Dashboard are two buttons, which will be explained in the Dashboard context menu, where these commands are also available.

Dashboard context menu

This context menu allows you to change what groups are visible, some other settings related to the Dashboard, as well as a few Dashboard related commands.

Figure 15.110. The Dashboard context menu



Groups submenu

The Groups submenu allows you to change what groups are visible. By default Cache, Swap, CPU and Memory are visible, and Misc is hidden, but you can choose to show or hide any of these here.

Update Interval submenu

The Update Interval submenu allows you to change how often the information shown in the Dashboard is updated. The default is 0.25 seconds, but you can change this to a longer period up to 4 seconds.

History Duration submenu

The History Duration submenu allows you to change for what period of time the information is shown. The default is 60 seconds, but you can choose from values between 15 and 240 seconds.

Start/Stop Recording...

This is also available as a button at the bottom of the Dashboard. This allows you to start or stop recording a performance log. In certain situations the developers may ask you to supply this log if you are experiencing performance related issues. This log can help them to figure out the problem. When you start recording you will be asked to select a location and filename where the log will be saved.

Add Marker...

If you are recording a performance log, this enables you to mark a certain event in the log. You will be asked to give a name to this event. This can make it easier for developers to find the problem area in your log, because logs can become fairly large. This is also available as a button at the bottom of the Dashboard when you are recording a performance log.

Add Empty Marker...

If you are recording a performance log, this enables you to mark a certain point in the log. An empty marker will be added, meaning you won't be asked to give it a name. This can make it easier for developers to find the problem area in your log, because logs can become fairly large. When you are recording you can also use the button at the bottom of the Dashboard while pressing the **Shift** key to add an empty marker.

Reset

Reset cumulative data removes the performance data and starts from zero. This is also available as a button at the bottom of the Dashboard when you are not recording a performance log.

Low Swap Space Warning...

If this option is enabled, the Dashboard will be raised to the top if your swap space is nearing the limit.

We will now explain each group separately.

Cache

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Cache shows what part of the tile cache, the size of which can be set in System Resources preferences, is currently being used. If your cache is often near the maximum, and you have enough available memory, you could consider increasing the cache size.

By default this shows the currently occupied part of the Cache, and the maximum cache size as set in preferences.

What is shown can be changed in the Cache tab menu by clicking on . You can choose to show or hide Occupied size, Maximum size used since you started measuring, the cache Limit, the Compression ratio, and Hit/Miss ratio.

Swap

Swap shows the current size of the on-disk tile swap, and what part of that is currently being used. It also shows the swap size limit. If your swap is often being used, and you have enough available memory, you could consider increasing the cache size.

By default this shows the current Swap size and what part is occupied, as well as the Swap size limit. What is shown can be changed in the Swap tab menu by clicking on <a>Image: Swap size show or hide the Occupied size, the current swap file Size, the swap file size Limit, the Queued size (the amount planned to be written to the swap file). Read is the total amount read from the swap file, Written is the total amount written to the swap file, and the Compression ratio of the data written to the swap file.

CPU

CPU shows the current CPU usage.

By default this shows the current CPU usage. What is shown can be changed in the CPU tab menu by clicking on

You can choose to show or hide CPU Usage, and the total amount of time the CPU has been Active.

Memory

Memory shows the current amount of memory used by GIMP, the amount of available (free) physical memory, and the total size of your physical memory.

What is shown can be changed in the Memory tab menu by clicking on <a>Image: Shown or hide the occupied tile Cache, the total size of the Tile memory, the amount of memory Used, the size of the Available physical memory, and the physical memory Size.

Misc

The Misc group is not shown by default, but has to be enabled in the Dashboard context menu first. It shows extra information mainly useful for developers.

By default all settings are shown, but what is shown can be changed in the Misc tab menu by clicking on <a>Images = Images = Imag







7.5. Error Console



7.7. Sample Points Dialog

7.7. Sample Points Dialog



7. Miscellaneous Dialogs



7.7. Sample Points Dialog

While the <u>Color Picker</u> can display color information about one pixel, the "Sample Points" dialog can display the data of four pixels of the active layer or the image, at the same time. Another important difference is that the values of these points are changed in real time as you are working on the image.

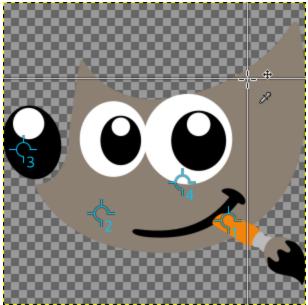
7.7.1. Activating the Dialog

This dialog is a dockable dialog; see the section <u>Section 2.3, "Dialogs and Docking"</u> for help on manipulating it. You can access it:

- from the main menu: Windows → Dockable Dialogs → Sample Points.
- from the Tab menu in any dockable dialog by clicking the <u>tab menu button</u> and selecting Add Tab → Sample Points.

7.7.2. Using sample points

To create a sample point, Ctrl -click on one of the two measure rulers of the image window and drag the mouse pointer. Two perpendicular guides appear. The sample point is where both guides intersect. You can see its coordinates in the lower left corner of the status area at the bottom. Release the mouse button.



The image shows four already defined sample points and the reticle when you press **Ctrl** on a measure ruler and then click and drag.

Sample points are shown as a round mark with an order number. You can hide these marks by unchecking View \rightarrow Show Sample Points in the main menu.

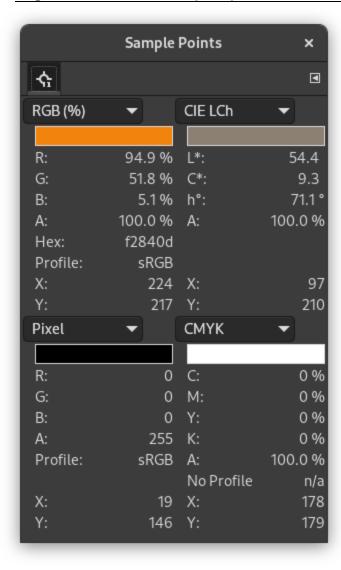
The "Sample Points" dialog does not automatically open when you create a sample point. To move or delete a sample point:

- Using the <u>Color Picker tool</u>, click-and-drag the sample point up to a measure ruler to delete it.
- Using a <u>paint tool</u>, | Ctrl | + click-and-drag the sample point up to a measure ruler to delete it.

By default, sampling is performed on all layers. If you want to sample on the active layer only, uncheck Sample Point Menu \rightarrow Sample Merged from the tab menu.

7.7.3. "Sample Points" dialog description

Figure 15.111. Sample points dialog



Information about all sample points is displayed in this window.

The color of the sampled point is displayed in a swatch box.

In the drop-down list, you can choose between:

Pixel

This choice displays the Red, Green, Blue and Alpha values of the pixel, as numbers between 0 and 255.

RGB (%)

This choice displays the *Red*, *Green*, *Blue* and *Alpha* values of the pixel, as percentages. It also shows the hexadecimal value of the pixel's color.

RGB (0..255)

This choice displays the *Red*, *Green*, *Blue* and *Alpha* values of the pixel, as hexadecimal values. It also shows the hexadecimal value of the pixel's color.

Grayscale (%)

HSV

This choice displays the *Hue*, in degrees, as well as the *Saturation*, *Value* and *Alpha* of the pixel, as percentages.

CIE LCh

CIE LAB

CIE xyY

CIE Yu'v'

CMYK

This choice displays the *Cyan*, *Magenta*, *Yellow*, *Black* and *Alpha* values of the pixel, as percentages. Data are supplied for every channel in the chosen color model. The Alpha is present only if the image holds an Alpha channel.

Hexa appears only with the RGB mode. That's the hexadecimal code of the HTML Notation.



3/29/25, 4:59 AM 7.8. Pointer Dialog

7.8. Pointer Dialog

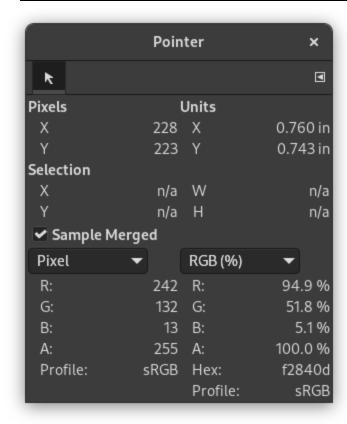


7. Miscellaneous Dialogs



7.8. Pointer Dialog

Figure 15.112. Pointer dialog



This dialog offers you, in a same window, in real time, the position of the mouse pointer, and the channel values of the pointed pixel, in the chosen color model.

7.8.1. Activating the Dialog

This dialog is a dockable dialog; see the section <u>Section 2.3, "Dialogs and Docking"</u> for help on manipulating it. You can access it:

- from the main menu: Windows \rightarrow Dockable Dialogs \rightarrow Pointer.
- from the Tab menu in any dockable dialog by clicking the tab menu button \blacksquare and selecting Add Tab \rightarrow Pointer.

7.8.2. "Pointer" dialog options

Pixels

Shows the position of the pointed pixel, in X (horizontal) and Y (vertical) coordinates, stated in pixels from the origin (the upper left corner of the canvas).

Units

Shows the distance from the origin, in inches.

Pointer Bounding Box

3/29/25, 4:59 AM 7.8. Pointer Dialog

This information is active when a selection exists. X and Y are the coordinates of the upper left corner of the rectangular frame that bounds rectangular and ellipse selections. H and W are the height and width of this box. This information also exits for the other selections, but they are of less interest and the bounding box is not visible. This information concerning the selection remains unchanged when you use another tool, while pointer coordinates vary.

Channel values

The channel values for the selected <u>color model</u> are shown below. Both pulldown menus contain the same choices, which makes it easier for you to compare the color values of a particular pixel using different color models. "Hex" is the <u>HTML Notation</u> of the pixel color, in hexadecimal. The choices on the pulldown menus are (Pixel is the default):

Pixel

The <u>RGB</u> channel values. This choice displays the *Red*, *Green*, *Blue* and *Alpha* values of the pixel, as numbers between 0 and 255.

RGB

The <u>RGB</u> channel values. This choice displays the *Red*, *Green*, *Blue* and *Alpha* values of the pixel, as percentages. It also shows the hexadecimal value of the pixel's color.

HSV

The <u>HSV</u> components. This choice displays the *Hue*, in degrees, as well as the *Saturation*, *Value* and *Alpha* of the pixel, as percentages.

CMYK

The <u>CMYK</u> channel values. This choice displays the *Cyan*, *Magenta*, *Yellow*, *Black* and *Alpha* values of the pixel, as percentages.

Sample Merged

If you enable this option, sampling is not calculated only from the values of the active layer, but from all visible layers.

For more information, see the Glossary entry.











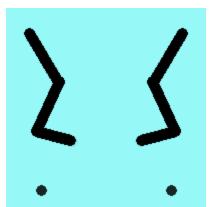
7.9. Symmetry Painting Dialog



7. Miscellaneous Dialogs



7.9. Symmetry Painting Dialog



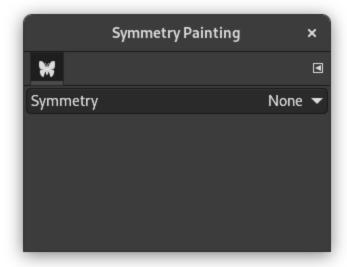
Symmetry Painting is supported by brush-based tools (Pencil, Paintbrush, Eraser, Airbrush, MyPaint brush, Clone, Smudge, Dodge) as well the Ink tool. There are several kinds of symmetry, all configurable.

7.9.1. Activating the Dialog

You can access this dialog from the main menu through: Windows \rightarrow Dockable Dialogs \rightarrow Symmetry Painting. The dialog "Symmetry Painting" is dockable. Read <u>Section 2.3, "Dialogs and Docking"</u> to learn more about the concept of dockability.

7.9.2. Using the Symmetry Painting dialog

Figure 15.113. Symmetry Painting dialog



This dialog is very simple. You only have a Symmetry item with a drop-down list that offers four options. As soon as you check a symmetry type, symmetry axes appear as dotted green lines in the image window and you can start painting with the brush you have chosen.

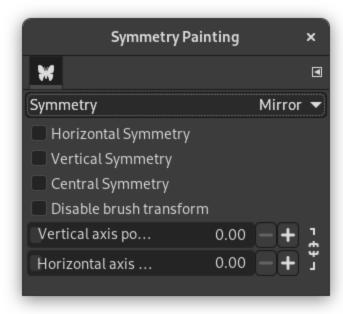
Options

none

That is the default option; the symmetry painting is not activated.

Mirror

Figure 15.114. The Symmetry mirror dialog



This is a symmetry like in a mirror. You can select an Horizontal symmetry, a Vertical symmetry or a Central symmetry. You can also select several symmetries.

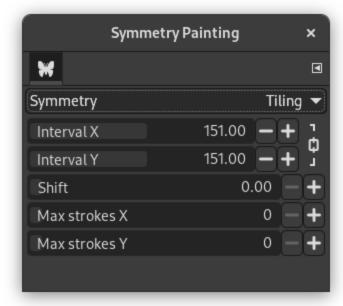
The default position for symmetry axis is the middle of the image window. You can place axis where you want using Horizontal axis position and Vertical axis position.

Disable brush transform: when you transform the drawing, the brush itself will end up transformed as well. For instance, in a mirror transform, not only will your drawing on the right of the canvas be mirrored on the left, but the brush itself is obviously "flipped" on the left. If for some reason, you want the drawn lines to be mirrored (or other transformation) but not the brush outline itself, you can check this box. For obvious reason, you won't see it with symmetrical brushes though. That's why you don't see the effect since many default brushes are symmetrical.

Tiling

"Tiling" is a translational symmetry, which can be finite (with a maximum of strokes) or infinite. In the latter case, it is the perfect tool to create patterns or seamless tiles, at painting time.

Figure 15.115. The Symmetry Tiling Dialog



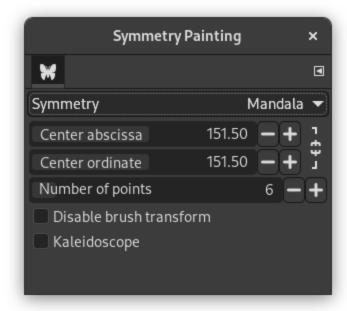
This mode covers the image with strokes.

No axes here. The options are:

- Interval X, Interval Y: these are the intervals on X and Y axis, in pixels, between stroke centers.
- Shift: this the shift between lines on the X axis, in pixels.
- Max strokes X, Max strokes Y: these are the maximal number of brush strokes on X and Y axis. Default is 0, which means no limit, according to the image size.

Mandala

Figure 15.116. The Symmetry Mandala Dialog



Strokes are placed around the center of coordinates of axis. The options are:

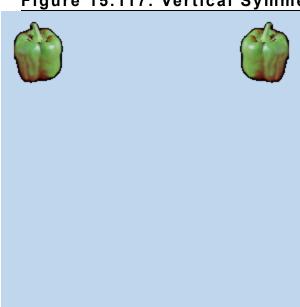
- Center abscissa, Center ordinate to position the center of coordinates.
- Number of points : number of strokes.
- Disable brush transform: see above.
- Kaleidoscope: reflect consecutive strokes.

7.9.3. Examples

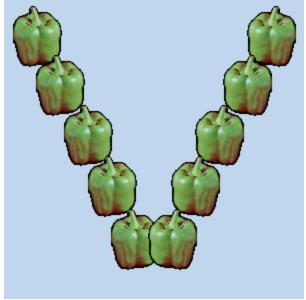
Pepper brush is selected. Pencil is used.

Example for Mirror

Figure 15.117. Vertical Symmetry



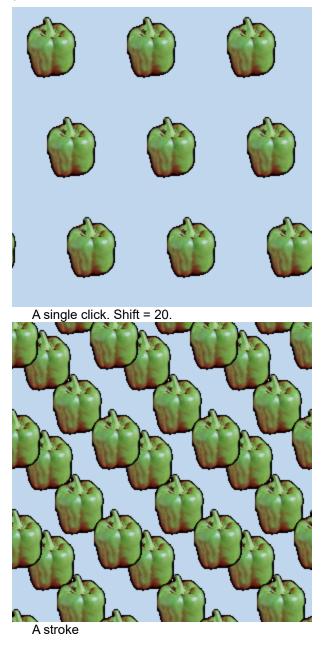
A single click



A stroke

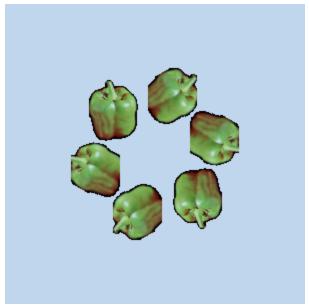
Example for Tiling

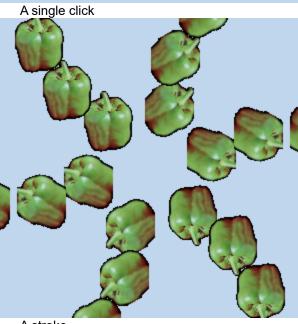
Figure 15.118.

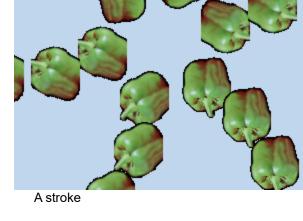


Example for Mandala

Figure 15.119.











Report a bug in GIMP Report a documentation error







7.10. Keyboard Shortcuts Dialog

7.10. Keyboard Shortcuts Dialog



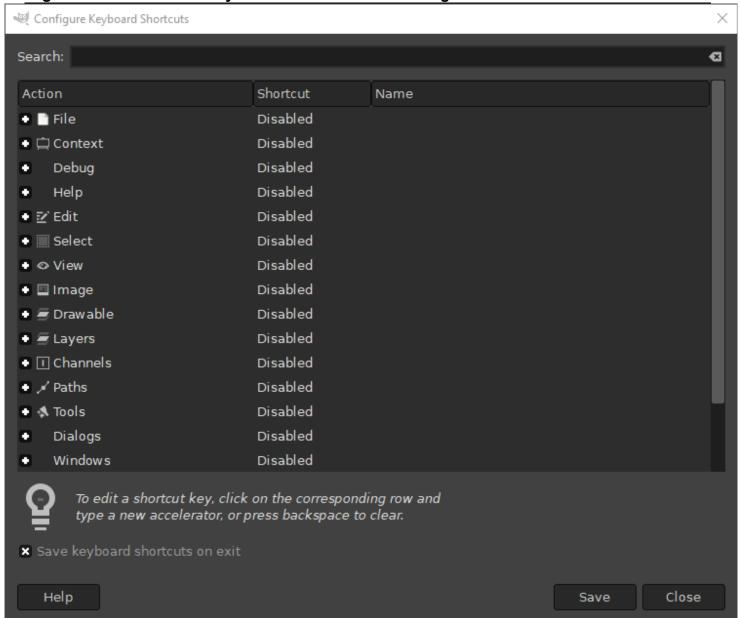
7. Miscellaneous Dialogs



7.10. Keyboard Shortcuts Dialog

The Keyboard Shortcuts Dialog allows you to change or add a keyboard shortcut to a menu command, a tool, filter, etc.

Figure 15.120. The Keyboard Shortcuts Dialog



7.10.1. Activating the Dialog

You can access it:

- from the main menu: Edit → Keyboard Shortcuts;
- or, from the <u>User Interface Preferences</u>: click the Configure Keyboard Shortcuts... button.

7.10.2. Using the Keyboard Shortcuts Dialog

If you already know for which command you want to change the keyboard shortcut, then you can use the Search field to enter it. This will shorten the list of possible commands to only those that contain the text you searched for.

The center area of the dialog shows the action categories on the left. You can expand a category by pressing the icon in front of it, and collapse it by pressing the icon again. Each expanded action category will show a list of available actions. The middle column shows which Shortcut is assigned to each action, or "Disabled" when the action doesn't have a Shortcut. The "Name" column shows the name by which GIMP knows the action.

All actions that can be assigned a shortcut are divided into categories. Each menu has a category that corresponds with its name, and all scripts and plug-ins are sorted into categories based on the first part of their name.



Tip

To increase the amount of visible actions, you can resize the dialog to your liking.

Figure 15.121. Assigning a keyboard shortcut

■ 🖅 Layers	Disabled
🎇 Add Alpha Channel	New accelerator layers-alpha-add
Remove Alpha Channel	Disabled layers-alpha-remove
🖫 Add to Selection	Disabled layers-alpha-selection-add
Intersect with Selection	Disabled layers-alpha-selection-intersect
💹 Alpha to Selection	Disabled layers-alpha-selection-replace
Subtract from Selection	Disabled layers-alpha-selection-subtract

The "New accelerator..." text in the Shortcuts column shows that GIMP is waiting for a new shortcut to be entered for the Add Alpha Channel action.

When you have found the action you want to set a shortcut for, click on the line that shows the action details. To change the shortcut, click again on the Shortcut column. The column Shortcut for that line will change to New accelerator.... GIMP is now waiting for you to use a keyboard shortcut. As soon as you enter a key combination, the shortcut is added to that action. Unless the shortcut you entered was already assigned to another action. In that case it will tell you what action the key combination is used for and ask you what to do. You can either choose to assign the shortcut anyway, or cancel the change.

If you made a mistake, and don't want to change that shortcut, press | **Esc** |

You can also remove an existing shortcut from an action. To do this select the line of the action, click on the Shortcut column, and then press **Backspace** to clear the shortcut.

Note that the categories themselves let you enter a shortcut. However, it will disappear after pressing a key, since a category doesn't have a command attached to it, so it can never be used. Select a command in the desired category before trying to assign a shortcut.

At the bottom of the dialog there is an option (checked by default) that tells GIMP whether to Save keyboard shortcuts on exit. If enabled, all changed shortcuts will be saved when you quit GIMP. If it is disabled, the shortcuts will only be saved if you used the Save button before closing the dialog.

The bottom of the dialog has three buttons:

- Help: will open this help page.
- Save: will save any changes you made to the shortcuts without closing the dialog.
- Close: will close the dialog without saving the settings to disk, but any changed shortcuts will still be active until GIMP closes. What happens after GIMP closes depends on the Save keyboard shortcuts on exit setting mentioned above.



7.9. Symmetry Painting Dialog





Chapter 16. Menus

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Chapter 16. Menus



Part III. Function Reference



Chapter 16. Menus

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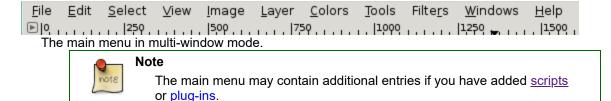
- 8.29. Color to Gray
- 8.30. Desaturate
- 8.31. Mono Mixer
- 8.32. Sepia
- 8.33. The "Map" Submenu
- 8.34. Rearrange Colormap
- 8.35. Set Colormap
- 8.36. Alien Map
- 8.37. Color Exchange
- 8.38. Rotate Colors
- 8.39. Gradient Map
- 8.40. Palette Map
- 8.41. Sample Colorize
- 8.42. The "Tone Mapping" Submenu
- 8.43. Fattal et al. 2002
- 8.44. Mantiuk 2006
- 8.45. Reinhard 2005
- 8.46. Stress
- 8.47. Destripe
- 8.48. Retinex
- 8.49. The "Info" Submenu
- 8.50. Histogram
- 8.51. Export Histogram
- 8.52. Border Average
- 8.53. Smooth Palette
- 8.54. Threshold
- 8.55. Colorize
- 8.56. Posterize
- 8.57. Color to Alpha...
- 8.58. Dither
- 8.59. RGB Clip
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- 9. The "Tools" Menu
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 - 12.7. Search and Run a Command
 - 12.8. Plug-In Browser
 - 12.9. The Procedure Browser
 - 12.10. GIMP online
 - 12.11. About

1. Introduction to Menus

3/29/25, 4:59 AM Chapter 16. Menus

There are many places in GIMP where you can find menus. The aim of this chapter is to explain all the commands that are accessible from the main menu at the top of GIMP's window, and the main menu you get by right clicking the canvas. All context menus and menu entries for other dialogs are described elsewhere in the chapters that describe the dialogs themselves.

1.1. The Main Menu



1.2. Context Menus

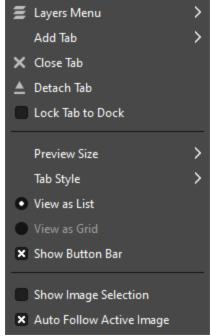
If you right-click on certain parts of GIMP's interface, a "context menu" opens, which allows access to additional commands related to where you clicked. Some places where you can access context menus are:

- Right-clicking on an image window displays the Main menu. This is useful when you are working in fullscreen mode, without a menu bar.
- Right-clicking on a layer in the <u>Layers Dialog</u> or on a channel in the <u>Channels Dialog</u> displays functions for the selected layer or channel.
- Right-clicking on the Main Menu bar has the same effect as left-clicking.
- Right-clicking on the title bar displays functions which do not belong to GIMP, but to the window manager of
 your computer.

1.3. Tab menus

The "Tab Menu" is not related to the Main Menu, but mentioned here for the sake of completeness: Every <u>dockable</u> dialog contains a Tab Menu button . Pressing this Tab Menu button opens a special menu of tab-related operations, with an entry at the top that opens the dialog's context menu.

Figure 16.1. A dockable dialog.



The Tab menu.

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See Section 2.3.2, "Tab Menu" to learn more about Tab menus.



7.10. Keyboard Shortcuts Dialog





2. The "File" Menu

3/29/25, 5:00 AM 2. The "File" Menu

2. The "File" Menu



Chapter 16. Menus



2. The "File" Menu

2.1. Overview

Figure 16.2. The File menu

Figure 16.2. The File menu	
Ctrl+N	
•	
Ctrl+O	
Ctrl+Alt+O	
•	
•	
Ctrl+S	
Shift+Ctrl+S	
Ctrl+E	
Shift+Ctrl+E	
Ctrl+P	
Send by Email	
Ctrl+Alt+F	
Ctrl+W	
Shift+Ctrl+W	
Ctrl+Q	



Note

Besides the commands described here, you may also find other entries in the menu. They are not part of GIMP itself, but have been added by third-party plug-ins. You can find information about the functionality of a plug-in by referring to its documentation.

3/29/25, 5:00 AM 2. The "File" Menu



Chapter 16. Menus

1

2.2. New...

2.2. New...



2. The "File" Menu



2.2. New...

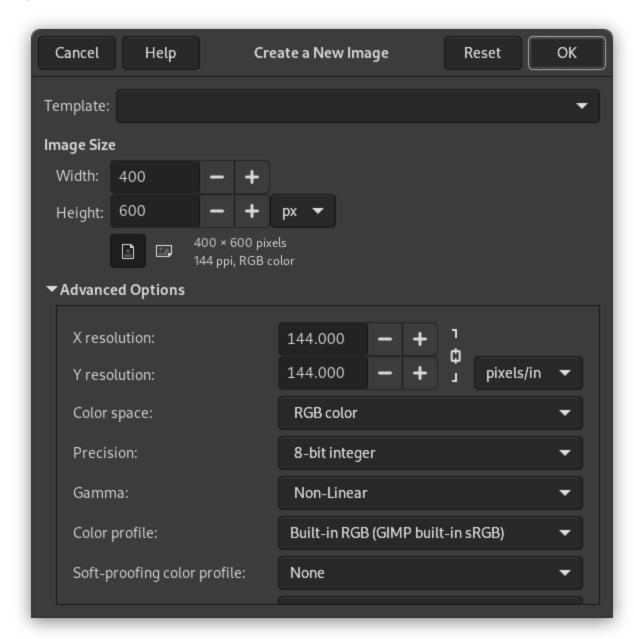
Using the "Create a New Image" dialog, you can create a new empty image and set its properties. The image is shown in a new image window. You may have more than one image on your screen at the same time.

2.2.1. Activating the Command

- You can access this command from the main menu through File \rightarrow New...,
- or by using the keyboard shortcut | Ctrl |+ N |.

2.2.2. Options

Figure 16.3. The "Create a New Image" dialog



Template

Rather than entering all the values by hand, you can select some predefined values for your image from a menu of templates, which represent image types that are somewhat commonly useful. The templates set values for the size, resolution, comments, etc. If there is a particular image shape that you use often and it does not appear on the list, you can create a new template, using the <u>Templates</u> dialog.

Image Size

Here you set the Width and Height of the new image. The default units are pixels, but you can choose a different unit if you prefer, using the adjoining menu. If you do, note that the resulting pixel size is determined by the X and Y resolution (which you can change in the Advanced Options), and by setting "Dot for Dot" in the View menu. If no image is open, the "New" image is opened in the empty image window, with the default size you have determined. If you open the "New" image when another is open (or has been), then it is opened in another window, with the same size as the first image.

Portrait/Landscape buttons

These buttons toggle between Portrait and Landscape mode. Their effect is to exchange the values for Width and Height. If the X and Y resolutions are different (in Advanced Options), then these values are also exchanged. On the right, image size, image resolution and color space are displayed.

2.2.2.1. Advanced Options

The Advanced Options are mostly of interest to more advanced GIMP users. You can display these options by clicking on the small triangle on the lower edge of the dialog window. Note that you will need to scroll down to see all the available options.

X and Y resolution

The values in the X resolution and Y resolution fields relate mainly to printing: they do not affect the size of the image in pixels, but they may determine its physical size when it is printed. The X and Y resolution values can determine how pixels are translated into other measurement units, such as millimeters or inches.



Tip

If you want to display the image on the screen at the correct dimensions, select View \rightarrow Dot for Dot. Set the zoom factor to 100% to see the image at its true screen size. The calibration of the screen size is normally done when GIMP is installed, but if the image does not display at the correct size, you may have to adjust the screen parameters in GIMP. You can do this in the Preferences dialog.

Color space

You can create the new image in different color modes, as either an RGB image or a grayscale image.

RGB color

The image is created in the Red, Green, Blue color system, which is the one used by your monitor or your television screen.

Grayscale

The image is created in black and white, with various shades of gray. Aside from your artistic interests, this type of image may be necessary for some plug-ins. Nevertheless, GIMP allows you to change an RGB image into-drayscale, if you would like.

You cannot create an indexed image directly with this menu, but of course you can always convert the image to indexed mode after it has been created. To do that, use the Image \rightarrow Mode \rightarrow Indexed command.

Precision

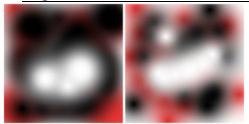
This setting lets you define the encoding used to store pixel information. For more details, please see the <u>Image Encoding</u> section.

Five options are available:

- 8-bit integer
- 16-bit integer
- 32-bit integer
- 16-bit floating point
- 32-bit floating point

If you wonder what the difference is between integer and floating point (in the graphics area): If you have an image with 16-bit integer precision per channel, then you have 65,536 shades of different red, green and blue color tones – all of them equally stepped to each other (equal color distance). If you have it in floating point, then there are no equal-wide steps – so you can distribute the possible color values over selected ranges. For example: if you know that you have a very dark image with many shades of dark red color tones then you would benefit from floating point because you can decrease the importance of the brighter color tones and get most color detail out of only the darker reds.

Figure 16.4. Precision example



Left image is 8-bit, right is 32-bit. You can see that there are much more available colors between color transitions on the right image.

Gamma

Here you can choose the <u>channel encoding</u> for your image. Choices are Non-linear and Linear light. For 8-bit integer precision the default is Non-linear, and for 32-bit floating point precision it is Linear light. For more

information see which precision options should you choose.

Color profile

Here you can choose a color profile to be used for your image. The default is GIMP's standard color profile based on Color space, Precision, and Gamma. If you prefer to use a different color profile you can select an ICC color profile file from a location on your computer by choosing Select color profile from disk....

Soft-proofing color profile

You can attach a CMYK color profile to the image with this option. This profile will be used to create a soft-proofed display of the image when the Proof Colors option is enabled in the View menu. As with the Color Profile, if you prefer to use a different color profile you can select an ICC color profile file from a location on your computer by choosing Select color profile from disk....

Soft-proofing rendering intent

This option lets you select the rendering intent that will be used to convert the colors from the soft-proofed image to your display device when View \rightarrow Color Management \rightarrow Proof Colors is enabled. The four intents are "Perceptual", "Relative colorimetric", "Saturation" and "Absolute colorimetric". See <u>Section 6.4, "Color Management"</u> and <u>Section 6.8, ""Color Management"</u> for more information.

Use Black Point Compensation

When enabled, the BPC algorithm attempts to adjust the display of darker areas in the image when the Proof Colors option is enabled in the View menu.

Fill with

Here, you specify the background color that is used for your new image. It is certainly possible to change the background of an image later, too. You can find more information about doing that in the <u>Layers Dialog</u>. There are several choices:

- Fill the image with the current Foreground color, shown in the Toolbox.

 Note that you can change the foreground color while the "New Image" dialog window is open.
- Fill the image with the current Background color, shown in the Toolbox. (You can change the background color too, while the dialog window is open.)
- Fill the image with Middle Gray (CIELAB). This will create a layer with a gray color that is 50% of perceptual lightness in the selected color mode.
- Fill the image with White.
- Fill the image with Transparency. If you choose this option, the image is created with an <u>alpha channel</u> and the background is transparent. The transparent parts of the image are then displayed with a checkered pattern, to indicate the transparency.
- Fill the image with a Pattern. If you choose this option, the image is filled with the currently active pattern (which you can change while this dialog is open).

Comment

You can write a descriptive comment here. The text is attached to the image as a <u>parasite</u>, and is saved with the image by some file formats (PNG, JPEG, GIF).



Note

You can view and edit this comment in the Image Properties dialog.







2. The "File" Menu

2.3. Create

3/29/25, 5:00 AM 2.3. Create

2.3. Create



2. The "File" Menu



2.3. Create

The commands in this submenu vary somewhat, depending upon your system, since GIMP makes calls to system functions.

2.3.1. Activating the Submenu

You can access this submenu from the main menu through File → Create.

2.3.2. From Clipboard

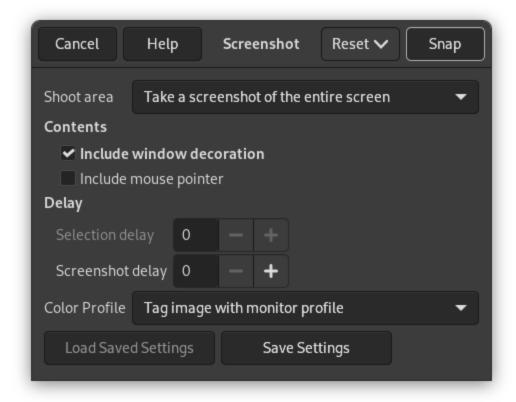
When you copy a selection, it goes into the clipboard. Use File \rightarrow Create \rightarrow From Clipboard or press Shift + Ctrl + V to create a new image from the content in the clipboard.

This command has the same action as the Paste as New Image command.

The **Print Screen** keyboard key captures the screen and puts it in the clipboard. This command has the same action as "taking a screenshot of the entire screen" in the <u>Screenshot</u> dialog window. The **Alt** + **Print Screen** key combination grabs the active window in the screen with its decorations and puts it in the clipboard.

2.3.3. Screenshot

Figure 16.5. The "Screenshot" window



3/29/25, 5:00 AM 2.3. Create



Note

The Screenshot dialog may look different depending on your operating system. For example, on a Linux system which implements the XDG portal specification, the screenshot dialog provided by your operating system may get opened instead of GIMP's built-in dialog described in this section.

The Screenshot... command opens a dialog with the following options:

Shoot area

Take a screenshot of a single window

The mouse pointer becomes a cross. Click in the image window you want to capture. A new image is created.

Take a screenshot of the entire screen

This is useful if you want to capture a pop menu. A delay is then necessary, so that you have time to pull the pop menu down.

Select a region to grab

The mouse pointer becomes a cross. Click and drag to create a rectangular selection in the image window. This selection will be opened as a new image. Its size is adapted to the selection size. Note: this setting is not available on Windows.

Contents

Include window decoration

If the Include window decoration option is unchecked, the title bar and the frame around the image will be removed.

Include mouse pointer

If the Include mouse pointer option is checked, then the mouse pointer and its coming with icon are also captured. The mouse pointer is captured in a separate layer. So you can move it to another place in the image.

Delay

Selection delay

The seconds to let pass until you select the shoot area.

Screenshot delay

When taking a screenshot of the entire screen, the screen is captured after this delay. In the other cases, the mouse pointer turns to a cross after this delay.

Color Profile

Select whether to Tag image with monitor profile or to Convert image with sRGB to GIMP's built-in sRGB color space. See <u>Section 6.8, ""Color Management" Submenu"</u> for more information.



Note

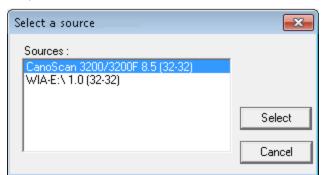
Due to a <u>software bug</u>, GIMP may assign an incorrect color profile to screenshots.

2.3.4. Scanner/Camera

This item is present in Windows operating system, using TWAIN. Image input devices appear in the dialog, if they are plugged-in. On Linux, you need to install third-party XSane plug-in which will be available in the File \rightarrow Create \rightarrow XSane \rightarrow Device dialog... menu.

Figure 16.6. Scanner and Camera

3/29/25, 5:00 AM 2.3. Create



The kinds of devices used to take pictures are too varied to be described here. Fortunately, their use is fairly intuitive. In the example shown (under Windows 7), you can start a scanner or load an image from a camera card.



3/29/25, 5:00 AM 2.4. Open...

2.4. Open...



2. The "File" Menu



2.4. Open...

The Open... command activates the Open Image dialog that lets you select an image to be loaded from your hard-drive or an external device.

For other ways of opening files, see the commands described on the next pages (<u>Section 2.5, "Open as Layers..."</u> etc.).







2.3. Create



2.5. Open as Layers...

2.5. Open as Layers...



2. The "File" Menu



2.5. Open as Layers...

The Open Image as layers command opens the Open Image dialog. The layers of the selected file are added to the current image as the top layers in the stack.

2.5.1. Activating the Command

- You can access this command from the main menu through File → Open as layers...,
- or by using the keyboard shortcut | Ctrl |+ | Alt |+ | O |.







2.4. Open...



2.6. Open Location...

2.6. Open Location...



2. The "File" Menu



2.6. Open Location...

This command opens the "Open Location" dialog, which lets you load an image from an online or network location, specified by a URI, in any of the formats that GIMP supports.

2.6.1. Activating the Command

You can access this command from the main menu through File → Open Location....

2.6.2. Description of the dialog window

The most typical schemes to open images with are:

file://

to open an image from a local drive

You can omit the "file://" prefix and open images simply by putting an absolute or relative path and filename in here. The default base directory for relative paths depends on your operating system. It is typically /home/<username>/ on Linux, C:\Documents and Settings\<username>\My Documents\My Images\ on Windows and /Users/<username>/ on Mac OS X.

ftp://

to open an image from a ftp server

https://, http://

to load an image from a website



Tip

When you are visiting an Internet site, you can right-click on an image and choose "Copy link address" in the drop-down menu. Then paste it in the "Open Location" dialog to open it in GIMP.

Even if this command makes it very easy to grab images from web sites: Please respect the copyright! Images, even if published on the Internet are not always free to be used for you.



2.5. Open as Layers...







2.7. Open Recent

3/29/25, 5:01 AM 2.7. Open Recent

2.7. Open Recent



2. The "File" Menu



2.7. Open Recent

Selecting Open Recent displays a submenu with the names of the files that you have opened recently in GIMP. Simply click on a name to reopen it. See the <u>Document History dialog</u> at the bottom of the Open Recent submenu if you cannot find your image.

2.7.1. Activating the Command

You can access this command from the main menu through File → Open Recent.







2.6. Open Location...



2.8. Save

3/29/25, 5:01 AM 2.8. Save

2.8. Save



2. The "File" Menu



2.8. Save

This command opens Section 5.3, "Save File".







2.7. Open Recent



2.9. Save As...

3/29/25, 5:02 AM 2.9. Save As...

2.9. Save As...



2. The "File" Menu



2.9. Save As...

The Save As command displays the "Save Image" dialog. The Save as dialog allows you to save your XCF image with another name and/or to another folder. For other image file formats you should use the Export As... command.

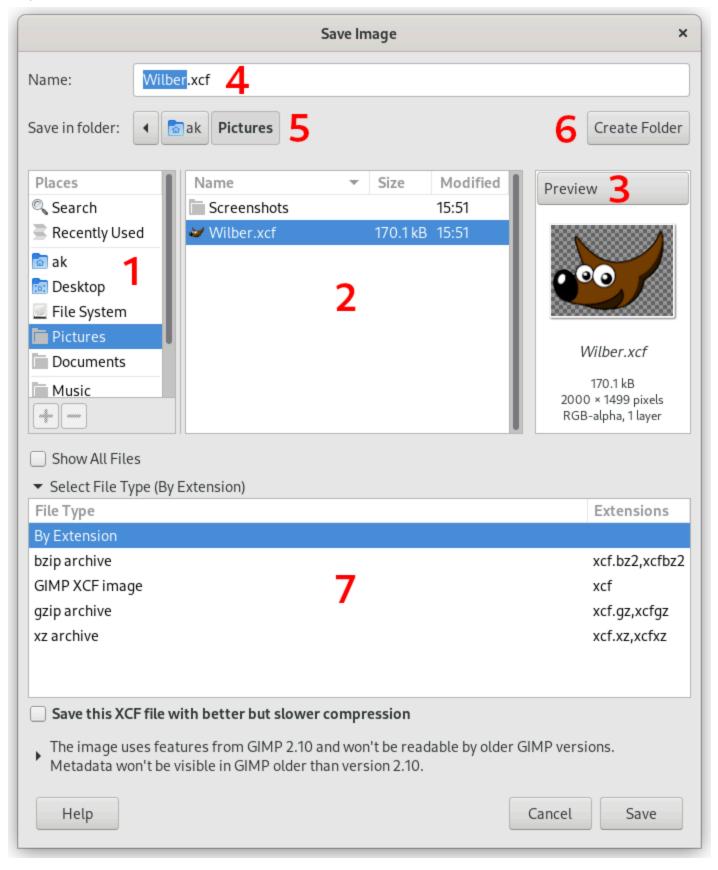
2.9.1. Activating the Command

- You can access this command from the main menu through File → Save As...,
- or by using the keyboard shortcut Shift + Ctrl + S .

2.9.2. The "Save Image" dialog

Figure 16.7. The "Save Image" dialog

3/29/25, 5:02 AM 2.9. Save As...



1. The left panel is divided into two parts. The upper part lists your main directories and your storage devices; you cannot modify this list. The lower part lists your bookmarks; you can add or remove *bookmarks*. To add a bookmark, select a directory or a file in the middle panel and click on the Add button at the bottom of the left panel. You can also use the Add to bookmarks command in the context menu, which you get by clicking the right mouse button. You can delete a bookmark by selecting it and clicking on the Remove button.

3/29/25, 5:02 AM 2.9. Save As...

2. The middle panel displays a list of the files in the current directory. Change your current directory by double left-clicking on a directory in this panel. Select a file with a single left click. You can then save to the file you have selected by clicking on the Save button. Note that a double left click saves the file directly. You can right click on the middle panel to access the *Show Hidden Files* command.

3. The selected image is displayed in the Preview window. File size, resolution and image composition are displayed below the preview window.

If your image has been modified by another program, click on the preview to update it.

4. Enter the filename of the new image file here.



Note

If the image has already been saved, GIMP suggests the same filename to you. If you click on *Save*, the file is overwritten.

- 5. Above the middle panel, the path of the current directory is displayed. You can navigate along this path by clicking on one of the buttons.
- 6. If you want to save the image into a folder that doesn't yet exist, you can create it by clicking on Create Folder and following the instructions.
- 7. At Select File Type, you can select a compressed format for your XCF file.







2.8. Save



2.10. Save a Copy...

2.10. Save a Copy...

2.10. Save a Copy...



2. The "File" Menu



2.10. Save a Copy...

The Save a Copy command does the same thing as the Save command, but with one important difference. It always asks for a file name and saves the image into the XCF file format, but it does not change the name of the active image or mark it as "clean". As a result, if you try to delete the image, or exit from GIMP, you are informed that the image is "dirty" and given an opportunity to save it.

This command is useful when you want to save a copy of your image in its current state, but continue to work with the original file without interruption.

2.10.1. Activating the Command

 You can access this command from the main menu through File → Save a Copy.... There is no default keyboard shortcut.



2.9. Save As...







2.11. Revert

3/29/25, 5:02 AM 2.11. Revert

2.11. Revert



2. The "File" Menu



2.11. Revert

The Revert command reloads the image from disk, so that it looks just like it did the last time it was saved — unless, that is, you or some application other than GIMP have modified the image file, in which case, the new contents are loaded.



Warning

When GIMP reverts a file, it actually closes the existing image and creates a new image. Because of this, reverting an image is not undoable, and causes the undo history of the image to be lost. GIMP tries to protect you from losing your work in this way by asking you to confirm that you really want to revert the image.

2.11.1. Activating the Command

 You can access this command from the main menu through File → Revert. There is no default keyboard shortcut.







2.10. Save a Copy...



2.12. Export... and Overwrite...

2.12. Export... and Overwrite...



2. The "File" Menu



2.12. Export... and Overwrite...

When the opened image is a native XCF file this command is called "Export". In that case, it does the same thing as **Export As...**.

When the opened image was imported, this command is called "Overwrite filename.extension". Using this command, you can export the imported image directly in its original file format, without going through the export dialog.







2.11. Revert



2.13. Export As...

3/29/25, 5:02 AM 2.13. Export As...

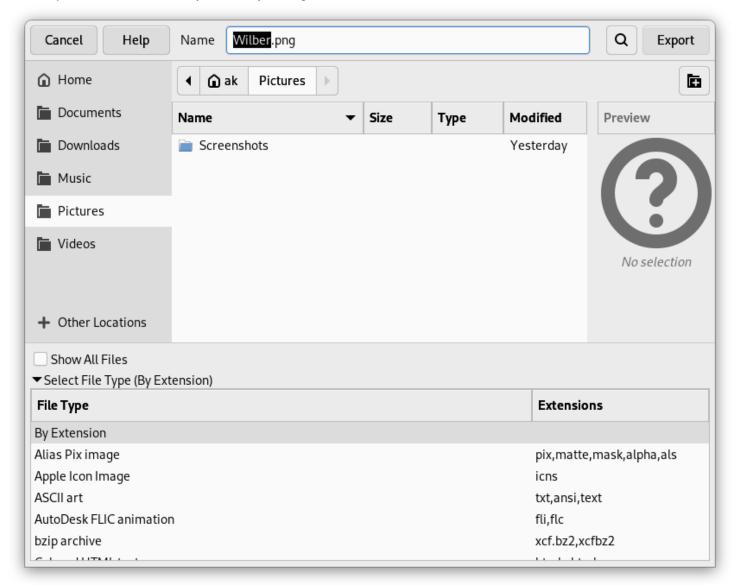
2.13. Export As...





2.13. Export As...

The **Export As...** command allows you to store your image in a format other than XCF.





Note

Please refer to <u>Section 1, "Files"</u> for information about exporting in different file formats.

2.13.1. Activating the Command

- You can access this command from the main menu through File → Export As...,
- or by using the keyboard shortcut | Shift |+ Ctrl |+ E |.



2.14. Create Template...



2. The "File" Menu



2.14. Create Template...

The Create Template... command opens the "Create New Template" dialog that allows you to create a template with the same dimensions and color space as the current image. A dialog pops up, which asks you to name the new template. Then the template is saved and becomes available in the New Image dialog. If you give a name that already exists, GIMP generates a unique name by appending a number to it. You can use the Templates dialog to modify or delete templates.

2.14.1. Activating the Command

• You can access this command from the main menu through File → Create Template.... There is no default keyboard shortcut.







2.13. Export As...



2.15. Print

3/29/25, 5:03 AM 2.15. Print

2.15. Print

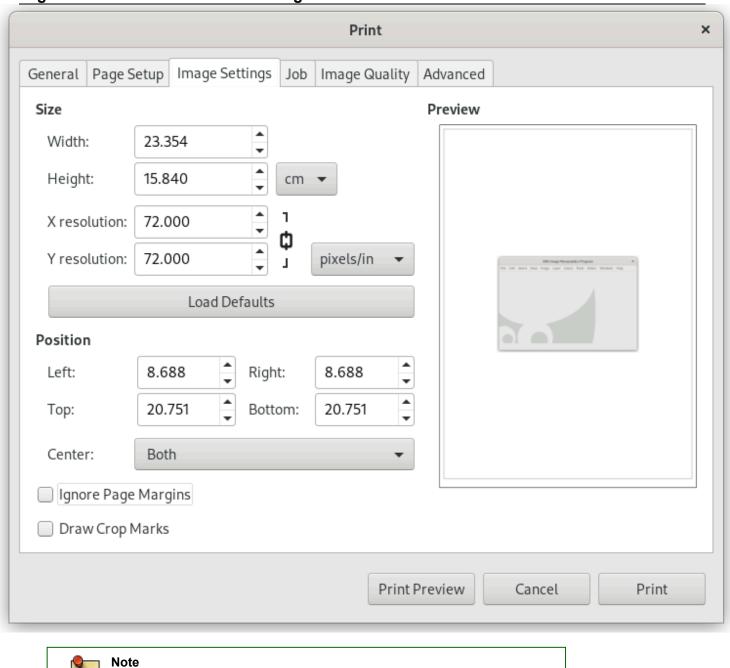




2.15. Print

GIMP has its own printing module. You can set page and image up. A preview button allows you to verify the result before printing.

Figure 16.8. The "Print" dialog



2.15.1. Activating the Command

See Printing your photos.

3/29/25, 5:03 AM 2.15. Print

• You can access this command from the main menu through File \rightarrow Print,

• or by using the keyboard shortcut Ctrl + P.



2.14. Create Template...



→

2.16. Send by Email

3/29/25, 5:03 AM 2.16. Send by Email

2.16. Send by Email



2. The "File" Menu



2.16. Send by Email

You can access this command from the main menu through File → Send by Email....

This command opens a dialog with the name of the image to be sent via email (you can edit it). Clicking on the Send button opens your local default mail software with the image attached.



Note

This command is only available on Unix/Linux-like operating systems with the <u>xdg-utils</u> package installed, or if your GIMP version was explicitly created (compiled) with Sendmail support.







2.15. Print



2.17. Copy Image Location

2.17. Copy Image Location



2. The "File" Menu



2.17. Copy Image Location

You can access this command from the main menu through File \rightarrow Copy Image Location . This command copies the image path to the clipboard. So, you can past it in a text.







2.16. Send by Email



2.18. Show in File Manager

2.18. Show in File Manager

+

2. The "File" Menu



2.18. Show in File Manager

You can access this command from the main menu through File \rightarrow Show in File Manager. This command opens the file manager in the directory containing the active image



t



2.17. Copy Image Location



2.19. Close View

3/29/25, 5:04 AM 2.19. Close View

2.19. Close View



2. The "File" Menu



2.19. Close View

The Close View command closes the active image. It is disabled if no image is open. Closing an image is not undoable: once it is closed, everything is gone, including the undo history. If the image is not "clean" — that is, if you have changed it since the last time you saved it — you are asked to confirm that you really want to close it.



Note

An image is only marked as clean when it is saved as an XCF file. Exporting to a different image format does not mark a changed image as clean, since it does not preserve all the information in the image.

2.19.1. Activating the Command

- You can access this command from the main menu through File → Close View,
- or by using the keyboard shortcut | Ctrl |+ | W |.
- For most systems on which GIMP runs, you can also execute it by clicking on a "Close" button somewhere on the image window titlebar. The location and appearance of this button are determined by the windowing system and the window manager. If no image is open, clicking on this button closes GIMP.











2.20. Close All

3/29/25, 5:04 AM 2.20. Close All

2.20. Close All



2. The "File" Menu



2.20. Close All

This command closes all images you have opened.

2.20.1. Activating the Command

- You can access this command from the main menu through File \rightarrow Close All,
- or by using the keyboard shortcut Shift + Ctrl + W .







2.19. Close View



2.21. Quit

3/29/25, 5:05 AM 2.21. Quit

2.21. Quit



2. The "File" Menu



2.21. Quit

The Quit command causes GIMP to close all images and exit. If there are any open images which contain unsaved changes (that is, they are not marked as "clean"), GIMP notifies you and displays a list of the unsaved images. You can then choose which images you would like to save, or you can cancel the command. Note that if you have a large number of images open, or are using a large part of the RAM on your system, it may take a little while for everything to shut down.

2.21.1. Activating the Command

- You can access this command from the main menu through File → Quit,
- or by using the keyboard shortcut | Ctrl |+ | Q |.
- For most systems on which GIMP runs, you can also execute it by clicking on a "Close" button somewhere on the main image window's titlebar. The location and appearance of this button are determined by the windowing system and the window manager. Clicking on this button closes GIMP when no image is open.







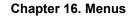
2.20. Close All



3. The "Edit" Menu

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3. The "Edit" Menu





3. The "Edit" Menu

3.1. "Edit" Menu Entries

Edit Menu

Figure 16.9. Conte	ents of the
Edit	
Undo Focus Blur	Ctrl+Z
Redo	Ctrl+Y
Undo History	
Cut	Ctrl+X
Сору	Ctrl+C
Copy Visible	Shift+Ctrl+C
Paste	Ctrl+V
Paste In Place	Ctrl+Alt+V
Paste as	•
Buffer	•
Clear	Delete
Fill with FG Color	
Fill with BG Color	
Fill with Pattern	
Fill Selection Outline	
Fill Path	
Stroke Selection	
Stroke Path	
Preferences	
Manage Extensions	
Input Devices	
Keyboard Shortcuts	
Modules	
Units	

In this section, you will find help for commands in the Edit menu item.

3/29/25, 5:05 AM 3. The "Edit" Menu



Note

Besides the commands described here, you may also find other entries in the menu. They are not part of GIMP itself, but have been added by third-party plug-ins. You can find information about the functionality of a plug-in by referring to its documentation.



2.21. Quit





3.2. Undo

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3.2. Undo



3. The "Edit" Menu



3.2. Undo

If you have made drawing or editing changes to the image which you don't want to keep, the Undo command allows you to undo the last change and return the image to its previous state. Almost anything you do to an image can be undone in this way (with the exception of scripts, which deactivate this function). Further Undo operations may be performed, depending upon the number of Undo levels configured in the <u>System Resources</u> page of the Preferences Dialog. See the section on <u>Undoing</u> for more information about GIMP's very sophisticated "Undo" functions. An alternate version of Undo is "Strong Undo", which skips changes in visibility of layers etc. This command can be executed by using the keyboard shortcut Ctrl + Shift + Z.

The operation that has been "undone" is not lost immediately: you can get it back by using the Redo command right away. But if you perform another operation, the ability to "Redo" will be irretrievably lost.

3.2.1. Activating the Command

- You can access this command from the main menu through Edit → Undo,
- or by using the keyboard shortcut | Ctrl |+ Z |
- or by simply clicking on the status you want in the Undo History dialog.











3.3. Redo

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3.3. Redo



3. The "Edit" Menu



3.3. Redo

The Redo command reverses the effects of the Undo command. Each "Undo" action can be reversed by a single "Redo" action. You can alternate "Undo" and "Redo" as many times as you like. Note that you can only "Redo" an operation if the last action you did was an "Undo". If you perform any operation on the image after Undoing something, then the former Redo steps are lost, and there is no way to recover them. See the <u>Undoing</u> section for more information.

An alternate version of Redo is "Strong Redo", which skips changes in visibility of layers etc. This command can be executed by using the keyboard shortcut Ctrl + Shift + Y.

To see the operations which you have done and undone, use the Undo History dialog.

3.3.1. Activating the Command

- You can access this command from the main menu through Edit → Redo,
- or by using the keyboard shortcut Ctrl + Y
- or by simply clicking on the status you want in the <u>Undo History dialog</u>.







3.2. <u>Undo</u>



3.4. Undo History

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3.4. Undo History



3. The "Edit" Menu



3.4. Undo History

The Undo History command activates the <u>Undo History dialog</u>, which shows you thumbnails representing the operations you have done so far on the current image. This overview makes it easier for you to undo steps or to redo them.

Use the arrows for <u>Undo</u> and <u>Redo</u>, or simply click on the thumbnail, to bring the image back to a previous state. This is especially useful when you are working on a difficult task, where you often need to undo several steps at once. It is much easier to click on step 10 than to type **Ctrl** + **Z** ten times.

The "Clear undo History" command may be useful if you are working on a complex image and you want to free some memory.

3.4.1. Activating the Command

 You can access this command from the main menu through Edit → Undo History. There is no default keyboard shortcut.







3.3. Redo



3.5. Cut

3/29/25, 5:06 AM 3.5. Cut

3.5. Cut



3. The "Edit" Menu



3.5. Cut

The Cut command deletes the contents of the image's selections, and saves them in a clipboard so that they can later be pasted using the "Paste", "Paste Into", or "Paste As New" commands. If there is no selection, the entire current layer is cut. The areas whose contents are cut are left transparent, if the layer has an alpha channel, or filled with the layer's background color, otherwise.



Note

The Cut command only works on the current active layer. Any layers above or below the active layer are ignored.

3.5.1. Activating the Command

- You can access this command from the main menu through Edit → Cut,
- or by using the keyboard shortcut | Ctrl |+| X |.



3.4. Undo History





Report a bug in GIMP Report a documentation error



3.6. Copy

3/29/25, 5:06 AM 3.6. Copy

3.6. Copy



3. The "Edit" Menu



3.6. Copy

The Copy command makes a copy of the current selection and stores it in the Clipboard. The information can be recalled using the <u>Paste</u>, <u>Paste Into Selection</u>, or <u>Paste as New Image</u> commands. If there is no selection, the entire current layer is copied. "Copy" only works on the current active layer. Any layers above or below it are ignored.

3.6.1. Activating the Command

- You can access this command from the main menu through Edit → Copy,
- or by using the keyboard shortcut | Ctrl |+ C |.







3.5. Cut



3.7. Copy Visible

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3.7. Copy Visible



3. The "Edit" Menu



3.7. Copy Visible

The Copy Visible command is similar to the <u>Copy</u> command. However, it does not just copy the contents of the current layer; it copies the contents of the visible layers (or the selection of the visible layers), that is, the ones that are marked with an "eye".



Note

Please note that the information about the layers is lost when the image data is put in the clipboard. When you later paste the clipboard contents, there is only one layer, which is the fusion of all the marked layers.

3.7.1. Activating the Command

You can access this command from the main menu through Edit → Copy Visible.







3.6. Copy



3.8. Paste

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3.8. Paste



3. The "Edit" Menu



3.8. Paste

The Paste command puts whatever is in the Clipboard from the last "Copy" or "Cut" command into the current image. The pasted section becomes a "floating selection" and is shown as a separate layer in the Layers Dialog. If there is an existing selection on the canvas, it is used to align the pasted data. If there is already a selection, the data is pasted using the selection as a center point. If you want the selection to be used as a clipping region for the pasted data, you should use the "Paste Into Selection" command.



Note

You can have only *one* floating selection at any one time. You cannot work on any other layer while there is a floating selection; you have to either anchor it or remove it.

3.8.1. Activating the Command

- You can access this command from the main menu through Edit → Paste,
- or by using the keyboard shortcut | Ctrl |+ | V |.







3.7. Copy Visible



3.9. Paste In Place

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3.9. Paste In Place



3. The "Edit" Menu



3.9. Paste In Place

The usual Paste command places the contents of the clipboard into the center of canvas. With this command, you can paste the contents of the clipboard at exact coordinates the contents was originally copied from. This feature is available for both the regular clipboard and named buffers.

3.9.1. Activating the Command

You can access this command from the main menu through Edit \rightarrow Paste In Place.







3.8. Paste



3.10. Paste as

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3.10. Paste as



3. The "Edit" Menu



3.10. Paste as

This command pastes the clipboard contents. Of course, you must use the "Copy" command before, so that you have something in the clipboard.

There is no way to empty the clipboard.

The submenu offers several ways to paste the clipboard contents:

- Section 3.10.1, "Paste as Single Layer"
- Section 3.10.2, "Paste As Single Layer In Place"
- Section 3.10.3, "Paste as New Image"
- Section 3.10.4, "Paste as Floating Data"
- Section 3.10.5, "Paste as Floating Data In Place"
- Section 3.10.6, "Paste as Floating Data Into Selection"
- Section 3.10.7, "Paste as Floating Data Into Selection In Place"
- Section 3.10.8, "Paste as New Brush"
- Section 3.10.9, "Paste as New Pattern"

3.10.1. Paste as Single Layer

The Paste as Single Layer command creates a new layer in the active image and pastes the clipboard contents into it. If the data are not rectangular or square in shape, any regions that do not extend to the edge of the canvas are left transparent (an Alpha channel is automatically created). Of course, you have to copy your selection before you use this command.

3.10.1.1. Activating the Command

You can access this command from the main menu through Edit \rightarrow Paste as \rightarrow Paste as Single Layer.

3.10.2. Paste As Single Layer In Place

The Paste as Single Layer In Place command creates a new layer in the active image and pastes the clipboard contents at exact coordinates the contents was originally copied from.

This feature is available for both the regular clipboard and named buffers.

3.10.2.1. Activating the Command

You can access this command from the main menu through Edit \rightarrow Paste as \rightarrow Paste as Single Layer In Place.

3.10.3. Paste as New Image

The Paste As New Image command creates a new image and pastes the image data from the Clipboard into it. If the data is not rectangular or square in shape, any regions outside the selection are left transparent (an alpha channel is automatically created). Of course, you have to copy your selection before you use this command, so that you get an image with the same dimensions as the selection.

This command has the same action as the File \rightarrow Create \rightarrow From Clipboard command.

3/29/25, 5:10 AM 3.10. Paste as

3.10.3.1. Activating the Command

- You can access this command from the main menu through Edit → Paste as → Paste as New Image,
- or by using the keyboard shortcut | Shift |+ Ctrl |+ V |.

3.10.4. Paste as Floating Data

The Paste as Floating Data command creates a floating selection in the active image and pastes the clipboard contents into it.

If the data are not rectangular or square in shape, any regions that do not extend to the edge of the canvas are left transparent (an Alpha channel is automatically created). Of course, you have to copy your selection before you use this command.

3.10.4.1. Activating the Command

You can access this command from the main menu through Edit \rightarrow Paste as \rightarrow Paste as Floating Data.

3.10.5. Paste as Floating Data In Place

The Paste as Floating Data In Place command creates a floating selection in the active image and pastes the clipboard contents into it at the exact location the contents was originally copied from.

If the data are not rectangular or square in shape, any regions that do not extend to the edge of the canvas are left transparent (an Alpha channel is automatically created). Of course, you have to copy your selection before you use this command.

3.10.5.1. Activating the Command

You can access this command from the main menu through Edit \rightarrow Paste as \rightarrow Paste as Floating Data In Place.

3.10.6. Paste as Floating Data Into Selection

The Paste as Floating Data Into Selection command replaces the contents of the current selection with the contents of the clipboard and turns it into a floating selection.

The clipboard data is clipped by the selection, but the image data in it can still be moved if it extends outside the selection.

If no selection exists, the "Paste as Floating Data Into Selection" command places the data from the clipboard into the center of the canvas, as the "Paste" command does.

3.10.6.1. Activating the Command

You can access this command from the main menu through Edit \rightarrow Paste as \rightarrow Paste as Floating Data Into Selection.

3.10.7. Paste as Floating Data Into Selection In Place

The Paste as Floating Data Into Selection In Place command replaces the contents of the current selection with the contents of the clipboard, at the exact coordinates the contents was originally copied from, and turns it into a floating selection.

The clipboard data is clipped by the selection, but the image data in it can still be moved if it extends outside the selection.

If no selection exists, the "Paste as Floating Data Into Selection In Place" command places the data from the clipboard into the center of the canvas, as the "Paste" command does.

3/29/25, 5:10 AM 3.10. Paste as

3.10.7.1. Activating the Command

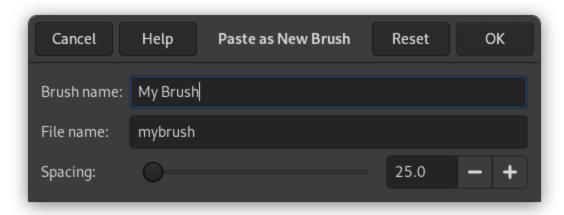
You can access this command from the main menu through Edit \rightarrow Paste as \rightarrow Paste as Floating Data Into Selection In Place.

3.10.8. Paste as New Brush

This command opens a dialog window which lets you name the new brush. The brush appears in the Brushes dialog.

3.10.8.1. Options

Figure 16.10. The "New Brush" dialog



Brush name

Brush name is the name as it will be in the "Brushes" Dialog.

File name

The new brush is saved as File name (with extension .gbr) in your personal brushes folder.

Spacing

Spacing: When the brush draws a line, it actually stamps the brush icon repeatedly. If brush stamps are very close, you get the impression of a solid line.

3.10.8.2. Activating the Command

You can access this command from the main menu through Edit → Paste as → Paste as New Brush....

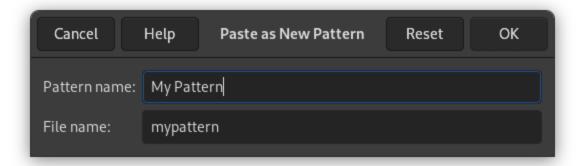
3.10.9. Paste as New Pattern

This command opens a dialog window which allows you to name your new pattern. The pattern appears in the <u>Patterns dialog</u>.

3.10.9.1. Options

Figure 16.11. The "New Pattern" dialog

3/29/25, 5:10 AM 3.10. Paste as



Pattern name

Pattern name is the name as it will be in the Patterns Dialog.

File name

The new pattern is saved as File name (with extension .pat) in your personal patterns folder.

3.10.9.2. Activating the Command

You can access this command from the main menu through Edit → Paste as → Paste as New Pattern....



3/29/25, 5:11 AM 3,11, Buffer

3.11. **Buffer**



3. The "Edit" Menu



3.11. Buffer

The commands in this submenu operate on *named buffers*. You can use the <u>Buffers dialog</u> to view and manage any named buffers you have created.

3.11.1. Activating the Submenu

You can access this submenu from the main menu through Edit \rightarrow Buffer.

3.11.2. Sub-menu entries

Cut Named...

The Cut Named command cuts the content of the selection from the active layer in the usual way, but instead of storing the contents in the global clipboard, it stores it in a special buffer that you name using a pop-up dialog.

Copy Named...

The Copy Named command copies the contents of the selection from the active layer in the usual way, but instead of storing the content in the global clipboard, it stores it in a special buffer that you name using a pop-up dialog.

Copy Visible Named...

The Copy Visible Named command copies the content of the selection from all the visible layers in the usual way, but instead of storing the content in the global clipboard, it stores it in a special buffer that you name using a pop-up dialog.

Paste Named...

The Paste Named command simply brings up the <u>Buffers dialog</u>. By selecting one of the listed buffers, and pressing one of the buttons at the bottom, you have several options to paste a buffer into the current image or as a new image.







3.12. Clear

3.10. Paste as



3/29/25, 5:11 AM 3.12. Clear

3.12. Clear



3. The "Edit" Menu



3.12. Clear

The Clear command deletes everything in the current selection. If there is no current selection, the contents of the active layer are removed. If the active layer has an alpha channel, the deleted selection is made transparent. You can restore the original color to the transparent area using the Eraser tool, by setting it to Anti-Erase. If the layer does not have an alpha channel, the deleted area is filled using the current background color.

Clearing a selection does not delete the selection itself. Unlike "Cut", "Clear" does not place the deleted contents in the Clipboard and the contents of the clipboard are unaffected.

3.12.1. Activating the Command

- You can access this command from the main menu through Edit → Clear,
- or by using the keyboard shortcut Delete.



3.11. Buffer





3.13. Fill with FG Color

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3.13. Fill with FG Color



3. The "Edit" Menu



3.13. Fill with FG Color

The Fill with FG Color command fills the image's selection with the solid color shown in the foreground part of the Color Area of the Toolbox. (The color is also shown to the left of the menu entry.) If some areas of the image are only partially selected (for example, as a result of feathering the selection), they are filled in proportion to how much they are selected.



Note

Please note that if the image has no selection, the whole active layer is filled

3.13.1. Activating the Command

- You can access this command from the main menu through Edit → Fill with FG Color,
- or by using the keyboard shortcut | Ctrl |+| , |.



Note

You can also fill a selection by click-and-dragging from the Toolbox foreground color.







3.12. Clear



3.14. Fill with BG Color

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3.14. Fill with BG Color



3. The "Edit" Menu



3.14. Fill with BG Color

The Fill with BG Color command fills the active layer selection with the solid color shown in the Background part of the Color Area of the Toolbox. (The color is also shown to the left of the menu entry.) If some areas of the image are only partially selected (for example, as a result of feathering the selection), they are filled in proportion to how much they are selected.



Note

Please note that if the image has no selection, the whole active layer is filled

3.14.1. Activating the Command

- You can access this command from the main menu through Edit → Fill with BG Color,
- or by using the keyboard shortcut | Ctrl |+| . |.



Note

You can also fill a selection by click-and-dragging from the Toolbox background color.







3.13. Fill with FG Color



3.15. Fill with Pattern

3/29/25, 5:12 AM 3.15. Fill with Pattern

3.15. Fill with Pattern



3. The "Edit" Menu



3.15. Fill with Pattern

The Fill with Pattern command fills the image's selection with the pattern shown in the Brush/Pattern/Gradient area of the Toolbox. (The pattern is also shown to the left of the menu entry.) If some areas of the image are only partially selected (for example, as a result of feathering the selection), they are filled in proportion to how much they are selected

You can select another pattern by using the Pattern Dialog.



Note

Please note that if the image has no selection, the whole active layer is filled

3.15.1. Activating the Command

- You can access this command from the main menu through Edit → Fill with Pattern,
- or by using the keyboard shortcut | Ctrl |+|; |.







3.14. Fill with BG Color



3.16. Fill Selection Outline

3.16. Fill Selection Outline



3. The "Edit" Menu



3.16. Fill Selection Outline

Using this command, you can fill the current selection with the current foreground color, or with the current pattern. It opens a dialog where you can choose between these two options. This command is only active when a selection exists.

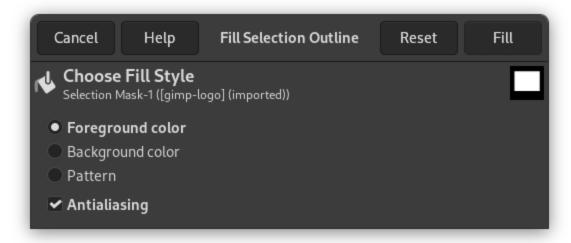
3.16.1. Activating the Command

You can access this command from the main menu through Edit → Fill Selection Outline....

3.16.2. Options

This command brings up a dialog window:

Figure 16.12. The "Choose Fill Style" dialog



Foreground color

The foreground color of the toolbox is used.

Background color

The background color of the toolbox is used.

Pattern

The active pattern of the toolbox is used.

Antialiasing

This option is enabled by default.









3.17. Fill Paths

3/29/25, 5:12 AM 3.17. Fill Paths

3.17. Fill Paths



3. The "Edit" Menu



3.17. Fill Paths

This function fills all areas delimited by the selected paths.

This command is only enabled when at least one path is selected.

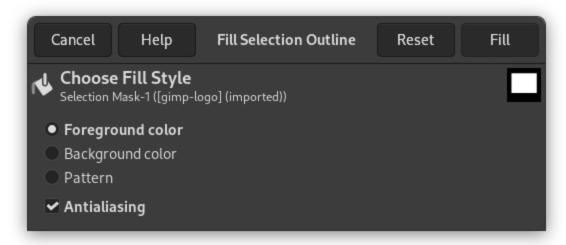
3.17.1. Activating the Command

You can access this command from the main menu through Edit \rightarrow Fill Paths....

3.17.2. Options

This command brings up a dialog window:

Figure 16.13. The "Choose Fill Style" dialog



Foreground color

The foreground color of the toolbox is used.

Background color

The background color of the toolbox is used.

Pattern

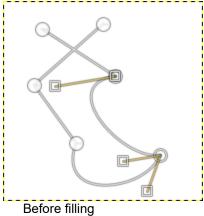
The active pattern of the toolbox is used.

Antialiasing

This option is checked by default.

Figure 16.14. Fill Path Example

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After filling



3.16. Fill Selection Outline







3.18. Stroke Selection

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3.18. Stroke Selection



3. The "Edit" Menu



3.18. Stroke Selection

The Stroke Selection... command strokes a selection in the image. There are two ways you can stroke the selection, either by using a paint tool or without using one. This means that the selection border, which is emphasized in the image with a dotted line, can be drawn with a stroke. There are various options which you can use to specify how this stroke should look.



Note

This command is only active if the image has an active selection.

3.18.1. Activating the Command

- You can access this command from the main menu through Edit \rightarrow Stroke Selection....
- You can also access this command from the bottom bar of the Selection Editor.

3.18.2. The "Stroke Selection" dialog



Note

The options for stroking selections and for stroking paths are the same. You can find the documentation about the options in the dialog box in the Stroke Path section.









3.19. Stroke Paths

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3.19. Stroke Paths

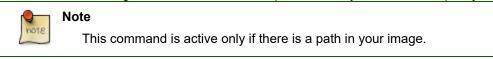


3. The "Edit" Menu



3.19. Stroke Paths

The Stroke Paths... command strokes a path in the image. There are two ways you can stroke the path, either by using a paint tool, or without using one. There are various options which you can use to specify how this stroke should look.

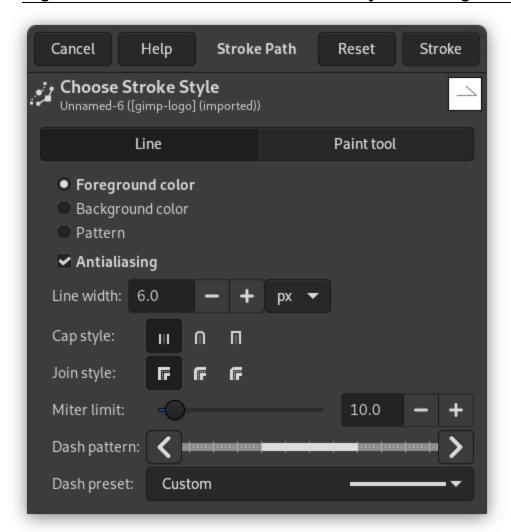


3.19.1. Activating the Command

- You can access this command from the main menu through Edit → Stroke Paths....
- You can also access it by clicking on the button with the same name in the Paths Dialog.

3.19.2. Description of the Dialog Window

Figure 16.15. The "Choose Stroke Style" dialog window



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The Choose Stroke Style dialog box allows you to choose between stroking the path with the Line options you specify or stroking it with a Paint tool.

Line

Foreground color, Background color, Pattern

Choose whether the line is drawn with the current Foreground color or Background color or Pattern, set in the Toolbox. This is distinct from the Dash pattern. If you select one of the two color options with no dash pattern, an unbroken line is drawn in the color set in the Toolbox. If you select Pattern with no dash pattern, an unbroken line is drawn with the pattern set in the Toolbox. If you select a line with a dash pattern, the color or pattern is still determined by the color or pattern set in the Toolbox. That is, if you have a marbled pattern set in the Toolbox, and select Pattern and dashed lines as Dash pattern, the dashes are drawn in the marbled pattern.

Antialiasing

Curved strokes or strokes drawn at an angle may look jagged or stair-stepped. The anti-aliasing option smooths them out.

Line width

You can set the width of the stroke using the text box. The default unit is pixels, but you can choose another unit with the drop-down list button.

Cap style

Choose the shape of the ends of an unclosed path, which can be Butt, Round or Square.

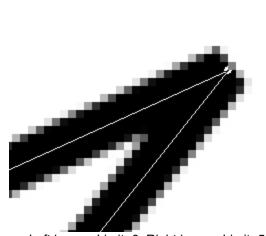
Join style

You can choose the shape of the path corners by clicking on Miter, Round or Bevel.

Miter limit

When two segments of a path come together, the mitering of the corner is determined by the Miter Limit. If the strokes were wide, and no mitering were done, there would be pointed ends sticking out at the corner. The Miter Limit setting determines how the gap, formed when the outer edges of the two lines are extended, will be filled. You can set it to a value between 0.0 and 100.0, by using the slider or the associated text box and its arrows.

Figure 16.16. Example of miter limit



Left image: Limit=0. Right image: Limit=5.

Dash pattern

On the pixel level, a dashed line is drawn as a series of tiny boxes. You can modify the pattern of these boxes. The black area with thin vertical lines represents the pixels of the dash. If you click on a black pixel, you remove it from the dash. If you click on a white pixel, you add it to the dash. The gray areas indicate how the pattern will be repeated when a dashed line is drawn.

Dash preset

Instead of making your own dash pattern, you can choose one from the drop-down box. This pattern will then be displayed in the Dash pattern area, so you can get an idea of how it will look.

Paint Tool

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Paint tool

Select a paint tool to use from the drop-down box to draw the stroke. The current options of the paint tool options are used to draw the stroke.

Emulate brush dynamics

See Brush Dynamics.







3.18. Stroke Selection



3.20. Preferences

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3.20. Preferences



3. The "Edit" Menu



3.20. Preferences

This command displays the <u>Preferences dialog</u>, which lets you alter a variety of settings that affect the look, feel, and performance of GIMP.

3.20.1. Activating the Command

You can access this command from the main menu through Edit → Preferences.







3.19. Stroke Paths



3.21. Input Devices

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3.21. Input Devices



3. The "Edit" Menu



3.21. Input Devices

This command displays the <u>Extended Input Devices</u> dialog, which lets you change the settings of input devices like a mouse, drawing tablet, etc.

3.21.1. Activating the Command

You can access this command from the main menu through Edit \rightarrow Input Devices.







3.20. Preferences



3.22. Keyboard Shortcuts

3.22. Keyboard Shortcuts



3. The "Edit" Menu



3.22. Keyboard Shortcuts

This command opens the <u>Keyboard Shortcuts Dialog</u>. Using that dialog you can add or change keyboard shortcuts to menu commands, tools, filters etc. A quicker way to change shortcuts to menu commands is described in <u>Section 2</u>, <u>"Creating Shortcuts to Menu Commands"</u>.

3.22.1. Activating the Command

You can access this command from the main menu through Edit \rightarrow Keyboard Shortcuts....







3.21. Input Devices



3.23. Modules

3/29/25, 5:14 AM 3.23. Modules

3.23. Modules



3. The "Edit" Menu



3.23. Modules

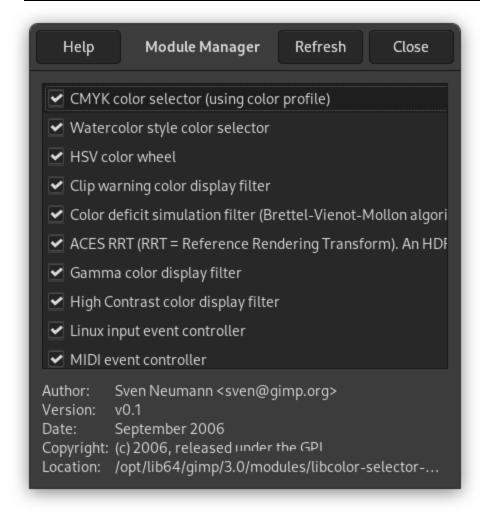
With the Modules command, you can show the various extension modules which are available and control which of them should be loaded. Modules perform functions such as choosing colors and display filtering. Any changes you make to the settings with the Module Manager command will take effect the next time you start GIMP. These changes affect GIMP's functional capabilities, its size in memory and its start-up time.

3.23.1. Activating the Command

You can access this command from the main menu through Edit \rightarrow Modules.

3.23.2. Description of the "Module Manager" Dialog

Figure 16.17. The "Module Manager" dialog window



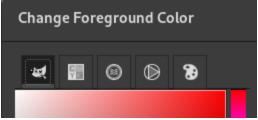
The window of the Module Manager shows the loadable modules.

Clicking on the boxes in the first column of the modules list will check or uncheck the modules. The next time you start GIMP, any checked module will be loaded.

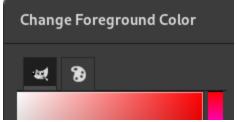
3/29/25, 5:14 AM 3.23. Modules

You will notice the difference only when you try to use the modules. For example, there are several <u>color selectors</u> to select the foreground or background color. Some of these selectors are modules and will only be available when you check the respective option in the module manager:

Figure 16.18. Loaded modules example: Color selector modules



Color selector modules loaded



Color selector modules not loaded

For loaded modules, information about the selected module is displayed at the bottom of the dialog.

In the second column, for each loaded module the purpose of the module is shown. For any module, that is not loaded, the directory path of this module is shown.

When you click on the Refresh button, the list of modules will be updated: modules no longer on disk will be removed, and new modules found will be added.







3.22. Keyboard Shortcuts



3.24. Units

3/29/25, 5:15 AM 3.24. Units

3.24. Units



3. The "Edit" Menu



3.24. Units

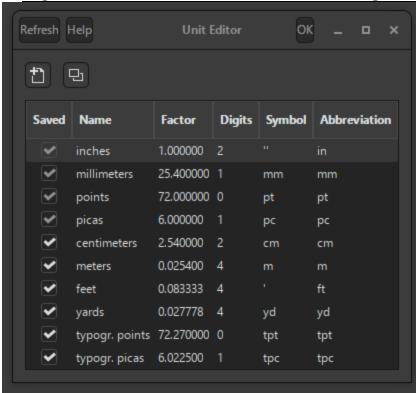
The Units command displays a dialog which shows information about the units of measurement that are currently being used by GIMP. It also allows you to create new units which can be used by GIMP in a variety of situations.

3.24.1. Activating the Command

You can access this command from the main menu through Edit \rightarrow Units.

3.24.2. Description of the "Unit Editor" dialog window

Figure 16.19. The "Unit Editor" dialog window



The list shows the units of measurement which are currently defined.

Description of the list elements

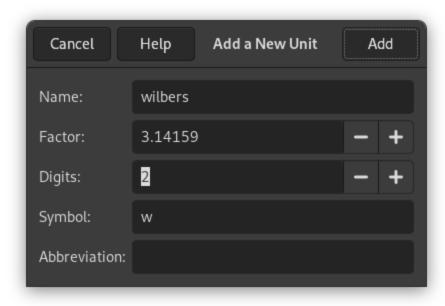
- Saved: If this column is checked, a unit definition will be saved when GIMP exits. Some basic units are always
 kept and cannot be unchecked. These are listed at the top of the list.
- Name: The string GIMP uses to identify the unit in its configuration files.
- Factor: How many units make up an inch.
- Digits: This field is a hint for numerical input fields. It specifies how many decimal digits the input field should provide to get approximately the same accuracy as an "inch" input field with two decimal digits.
- Symbol: The unit's symbol if it has one (e.g. " for inches). The unit's abbreviation is used if doesn't have a symbol.

3/29/25, 5:15 AM 3.24. Units

• Abbreviation: The unit's abbreviation (e.g. "cm" for centimeters).

3.24.3. Defining New Units

Figure 16.20. The "Add a New Unit" dialog



Adding the new unit "wilbers"

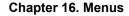
Click on the T New button or the Duplicate button to open the dialog shown above. The input fields on the dialog are described in the previous section.

If you click on the \Box New button, most input fields are empty. If you click on the \Box Duplicate button, the values initially displayed in the input fields of the dialog are the values of the unit you have currently selected in the Unit Editor dialog. You can then edit the values to create your new unit.



3/29/25, 5:15 AM 4. The "Select" Menu

4. The "Select" Menu







4. The "Select" Menu

4.1. Introduction to the "Select" Menu

Figure 16.21. The Contents of the "Select" menu

Figure 16.21. The	Contents
Select	
All	Ctrl+A
None	Shift+Ctrl+A
Invert	Ctrl+I
Float	Shift+Ctrl+L
By Color	Shift+O
From Path	Shift+V
Selection Editor	
Feather	
Sharpen	
Shrink	
Grow	
Border	
Remove Holes	
Distort	
Rounded Rectangle	
☐ Toggle Quick Mask	Shift+Q
Save to Channel	
To Path	

This section explains the commands on the Select menu of the main menu.



Note

Besides the commands described here, you may also find other entries in the menu. They are not part of GIMP itself, but have been added by third-party plug-ins. You can find information about the functionality of a plug-in by referring to its documentation.











4.2. Select All

3/29/25, 5:15 AM 4.2. Select All

4.2. Select All



4. The "Select" Menu



4.2. Select All

The Select All command creates a new selection which contains everything on the current layer.

4.2.1. Activating the Command

- You can access this command from the main menu through Select → All,
- or by using the keyboard shortcut | Ctrl |+ A |.
- You can also access this command from the bottom bar of the <u>Selection Editor</u>, or through the <u>Tab menu</u> in the Selection Editor Menu.







4. The "Select" Menu



4.3. None

3/29/25, 5:16 AM 4.3. None

4.3. None



4. The "Select" Menu



4.3. None

The None command cancels all selections in the image. If there are no selections, the command doesn't do anything. Floating selections are not affected.

4.3.1. Activating the Command

- You can access this command from the main menu through Select → None,
- or by using the keyboard shortcut | Shift |+ Ctrl |+ A |
- You can also access this command from the bottom bar of the <u>Selection Editor</u>, or through the <u>Tab menu</u> in the Selection Editor Menu.







4.2. Select All



4.4. Invert

3/29/25, 5:16 AM 4.4. Invert

4.4. Invert



4. The "Select" Menu



4.4. Invert

The Invert command inverts the selection in the current layer. That means that all of the layer contents which were previously outside of the selection are now inside it, and vice versa. If there was no selection before, the command selects the entire layer.



Warning

Do not confuse this command with the Invert colors command.

4.4.1. Activating the Command

- You can access this command from the main menu through Select → Invert,
- or by using the keyboard shortcut Ctrl + I.
- You can also access this command from the bottom bar of the <u>Selection Editor</u>, or through the <u>Tab menu</u> in the Selection Editor Menu.







4.3. None



4.5. Float

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4.5. Float



4. The "Select" Menu



4.5. Float

The Float submenu consists of commands to convert a selection into a "floating selection".

A floating selection (sometimes called a "floating layer") is a type of temporary layer which is similar in function to a normal layer, except that before you can resume working on any other layers in the image, a floating selection must be *anchored*. That is, you have to attach it to a normal (non-floating) layer, usually the original layer (the one which was active previously), or turn it into a new layer.



Important

You cannot perform any operations on other layers while the image has a floating selection!

You can use various operations to change the image data on the floating selection. There can only be one floating selection in an image at a time.



qiT

If you display the layer boundary by using the Show Layer Boundary command, you may have difficulty selecting a precise area of the image which you want in a layer. To avoid this problem, you can make a rectangular selection, transform it into a floating selection and anchor it to a new layer. Then simply remove the original layer.

4.5.1. Activating the Submenu

You can access this submenu from the main menu through Select → Float.

4.5.2. Contents of the "Float" submenu

The "Float" submenu commands are described below.

Cut and Float

The "Cut and Float" command cuts the image selection from the layer and converts it into a floating selection.

Activating the command

- You can access this command from the main menu through Select → Float → Cut and Float.
- By using the keyboard shortcut | Shift |+ | Ctrl |+ | L |.

Copy and Float

The "Copy and Float" command copies the image selection from the layer and converts it into a floating selection.

Activating the command

You can access this command from the main menu through Select → Float → Copy and Float.

4.5.3. Creating a Floating Selection Automatically

Some image operations create a floating selection automatically:

• The "paste" operations <u>Paste Buffer, Paste Buffer In Place</u>, <u>Paste Buffer Into The Selection</u>, <u>Paste Buffer Into The Selection</u>, <u>Paste Buffer Into The Selection In Place</u>, <u>Paste as Floating Data</u> or <u>Paste as Floating Data</u>

3/29/25, 5:16 AM 4.5, Float

Into Selection or Paste as Floating Data Into Selection In Place, also create a floating selection.

- In addition, all the Transform tools: <u>Unified Transform</u>, <u>Rotate</u>, <u>Scale</u>, <u>Shear</u>, <u>Flip</u>, <u>Perspective</u>, <u>3D Transform</u>, and <u>Handle Transform</u>, create a floating selection when they are used on a selection, rather than a layer. When the Affect mode is *Transform Layer* and a selection already exists, these tools transform the selection and create a floating selection with the result. If a selection does not exist, they transform the current layer and do not create a floating selection. (If the Affect mode is *Transform Selection*, they also do not create a floating selection.)
- By click-and-dragging a selection while pressing the Ctrl + Alt , or Shift + Alt keys (see Section 2.1, "Moving or Resizing a Selection") you also automatically create a floating selection.

4.5.4. Anchor a Floating Selection

You can anchor a floating selection in various ways:

- You can anchor the floating selection to the current layer the selection is originating from. To do this, click
 anywhere on the image except on the floating selection. This merges the floating selection with the current
 layer.
- Use the Anchor layer command (Ctrl + H).
- By clicking on the anchor button of the <u>Layers Dialog</u>, that appears when the floating selection is created, instead of the default Merge layers icon.
- Use the To New Layer command (Shift + Ctrl + N) to turn the floating selection into a newly created layer.



3/29/25, 5:16 AM 4.6. By Color

4.6. By Color



4. The "Select" Menu



4.6. By Color

The By Color command is an alternate way of accessing the "Select By Color" tool, one of the basic selection tools. You can find more information about using this tool in <u>Select By Color</u>.

4.6.1. Activating the Command

- You can access this command from the main menu through Select → By Color,
- or by using the keyboard shortcut | Shift |+ O |.







4.5. Float



4.7. Selection From Paths

4.7. Selection From Paths



4. The "Select" Menu



4.7. Selection From Paths

The Selection From Paths command transforms the selected paths into a selection. If a path is not closed, the command connects the two end points with a straight line. The original path is unchanged.

4.7.1. Activating the Command

- You can access this command from the main menu through Select → Selection From Paths.
- In addition, you can click on the Path to <u>Selection button</u> in the Paths dialog to access the command.
- You can also use the keyboard shortcut Shift + V.







4.6. By Color



4.8. Selection Editor

4.8. Selection Editor



4. The "Select" Menu



4.8. Selection Editor

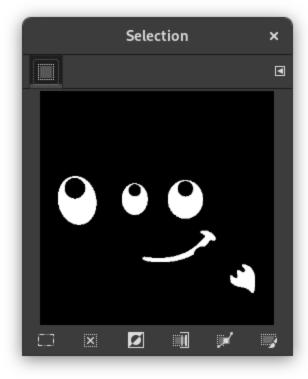
The Selection Editor command displays the "Selection Editor" dialog window. This dialog window displays the active selection in the current image and gives you easy access to the selection-related commands. It is not really intended for editing selections directly, but if you are working on a selection, it is handy to have the selection commands all together, since it is easier to click on a button than to search for commands in the command tree of the menubar. The "Selection Editor" also offers some advanced options for the "Select to Path" command.

4.8.1. Activating the Command

You can access this command from the main menu through Select → Selection Editor.

4.8.2. Description of the "Selection Editor" dialog window

Figure 16.22. The "Selection Editor" dialog window



The Buttons

The "Selection Editor" dialog window has several buttons which you can use to easily access selection commands:

- The <u>Select All</u> button.
- The <u>Select None</u> button.
- The Select Invert button.
- The Save to Channel button.

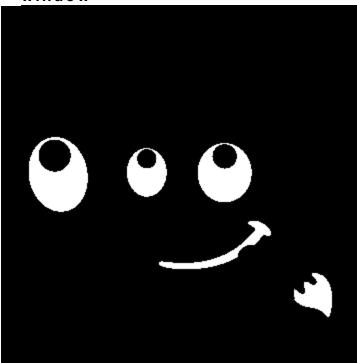
• The <u>To Path</u> button. If you hold the <u>Shift</u> key while clicking on this button, the <u>Advanced Settings</u> dialog is displayed. Please see the next section for details about these options.

The <u>Stroke Selection</u> button.

The display window

In the display window, selected areas of the image are white, non-selected areas are black, and partially selected areas are in shades of gray. Clicking in this window acts like Select by Color. See the example below.

Figure 16.23. Example of clicking in the "Selection Editor" display window



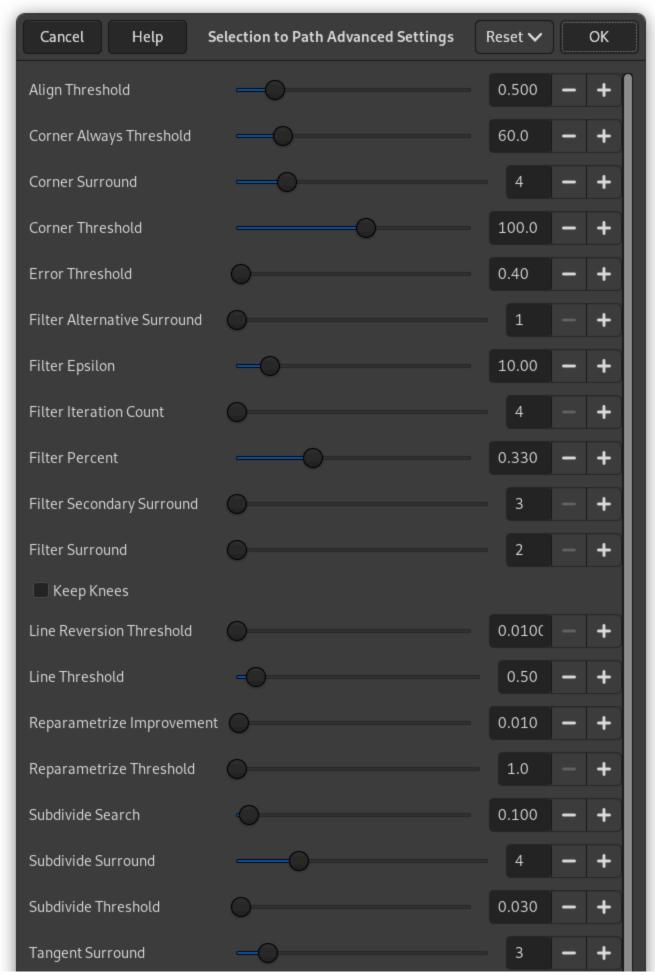
Selection Editor window after clicking.

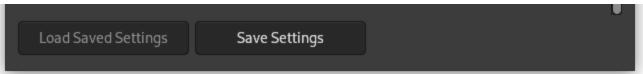


Image with the resulting selection applied.

4.8.3. The "Selection to Path Advanced Settings" dialog

Figure 16.24. The "Advanced Settings" dialog window

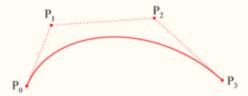




The "Selection to Path Advanced Settings" dialog, that you get by **Shift** clicking on the Selection to Path button, contains a number of options, most of which you can set with either a slider bar or a text box. There is also one check box. These options are mostly used by advanced users. They are:

- Align Threshold: If two endpoints are closer than this value, they are made to be equal.
- Corner Always Threshold: If the angle defined by a point and its predecessors and successors is smaller than this, it is a corner, even if it is within Corner Surround pixels of a point with a smaller angle.
- Corner Surround: Number of points to consider when determining if a point is a corner or not.
- Corner Threshold: If a point, its predecessors, and its successors define an angle smaller than this, it is a corner.
- *Error Threshold*: Amount of error at which a fitted spline is unacceptable. If any pixel is further away than this from the fitted curve, the algorithm tries again.
- Filter Alternative Surround: A second number of adjacent points to consider when filtering.
- Filter Epsilon: If the angles between the vectors produced by Filter Surround and Filter Alternative Surround points differ by more than this, use the one from Filter Alternative Surround.
- Filter Iteration Count: The number of times to smooth the original data points. Increasing this number dramatically, to 50 or so, can produce vastly better results. But if any points that "should" be corners aren't found, the curve goes wild around that point.
- Filter Percent: To produce the new point, use the old point plus this times the neighbors.
- Filter Secondary Surround: Number of adjacent points to consider if Filter Surround points defines a straight line.
- Filter Surround: Number of adjacent points to consider when filtering.
- Keep Knees: This check box says whether or not to remove "knee" points after finding the outline.
- Line Reversion Threshold: If a spline is closer to a straight line than this value, it remains a straight line, even if it would otherwise be changed back to a curve. This is weighted by the square of the curve length, to make shorter curves more likely to be reverted.
- *Line Threshold*: How many pixels (on the average) a spline can diverge from the line determined by its endpoints before it is changed to a straight line.
- Reparametrize Improvement: If reparameterization doesn't improve the fit by this much percent, the algorithm stops doing it.
- Reparametrize Threshold: Amount of error at which it is pointless to reparameterize. This happens, for example, when the algorithm is trying to fit the outline of the outside of an "O" with a single spline. The initial fit is not good enough for the Newton-Raphson iteration to improve it. It may be that it would be better to detect the cases where the algorithm didn't find any corners.
- Subdivide Search: Percentage of the curve away from the worst point to look for a better place to subdivide.
- Subdivide Surround: Number of points to consider when deciding whether a given point is a better place to subdivide.
- Subdivide Threshold: How many pixels a point can diverge from a straight line and still be considered a better
 place to subdivide.
- *Tangent Surround*: Number of points to look at on either side of a point when computing the approximation to the tangent at that point.

[6] "Spline" is a mathematical term for a function which defines a curve by using a series of control points, such as a Bézier curve.



See Wikipedia for more information.



4.7. Selection From Paths

1

4.9. Feather

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4.9. Feather



4. The "Select" Menu



4.9. Feather

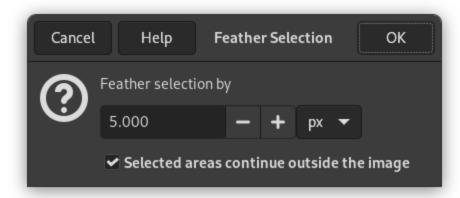
The Feather command feathers the edges of the selection. This creates a smooth transition between the selection and its surroundings. You normally feather selection borders with the "Feather Edges" option of the selection tools, but you may feather them again with this command.

4.9.1. Activating the Command

You can access this command from the main menu through Select \rightarrow Feather.

4.9.2. Description of the "Feather Selection" dialog window

Figure 16.25. The "Feather Selection" dialog



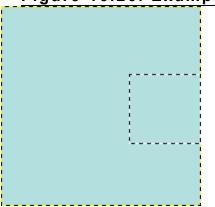
Feather selection by

Enter the width of the selection border feathering. The default units are pixels, but you can also choose other units with the drop-down menu.

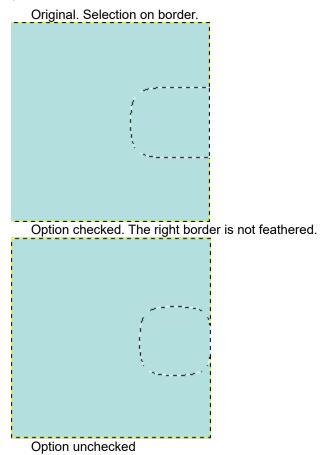
Selected areas continue outside the image

If the selection is on border of the image (or goes beyond the border), this option acts as if the selected area continued outside the image.

Figure 16.26. Example



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4.10. Sharpen

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4.10. Sharpen



4. The "Select" Menu



4.10. Sharpen

The Sharpen command reduces the amount of blur or fuzziness around the edge of a selection. It reverses the effect of the <u>Feather Selection</u> command. The new edge of the selection follows the dotted line of the edge of the old selection. Anti-aliasing is also removed.



Note

Please do not confuse this command with the Sharpen (Unsharp Mask)

4.10.1. Activating the Command

You can access this command from the main menu through Select \rightarrow Sharpen.







4.9. Feather



4.11. Shrink

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4.11. Shrink



4. The "Select" Menu



4.11. Shrink

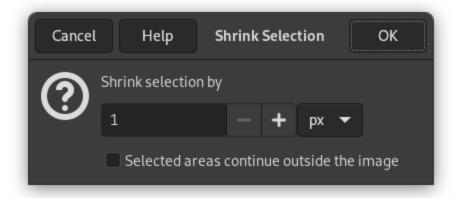
The Shrink command reduces the size of the selected area by moving each point on the edge of the selection a certain distance further away from the nearest edge of the image (toward the center of the selection). Feathering is preserved, but the shape of the feathering may be altered at the corners or at points of sharp curvature.

4.11.1. Activating the Command

You can access this command from the main menu through Select → Shrink....

4.11.2. Description of the "Shrink" dialog

Figure 16.27. The "Shrink Selection" dialog



Shrink selection by

Enter the amount by which to reduce the selection in the text box. The default unit is pixels, but you can choose a different unit of measurement from the drop-down menu.

Selected areas continue outside the image

This option is only of interest if the selection runs along the edge of the image. If it does and this option is checked, then the selection shrinks away from the edge of the image. If this option is not checked, the selection continues to extend to the image border. See <u>Selected areas continue outside the image</u>.



3/29/25, 5:20 AM 4.12. Grow

4.12. Grow



4. The "Select" Menu



4.12. Grow

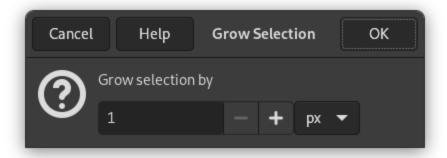
The Grow command increases the size of a selection in the current image. It works in a similar way to the <u>Shrink</u> command, which reduces the size of a selection.

4.12.1. Activating the Command

You can access this command from the main menu through Select \rightarrow Grow.

4.12.2. Description of the "Grow Selection" dialog

Figure 16.28. The "Grow Selection" dialog window



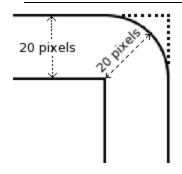
Grow selection by

You can enter the amount by which to increase the selection in the text box. The default unit of measurement is pixels, but you can choose a different unit by using the drop-down menu.

4.12.3. A Peculiarity of Rectangular Selections

When you grow a rectangular selection, the resulting selection has rounded corners. The reason for this is shown in the image below:

Figure 16.29. Why growing a rectangular selection results in rounded corners



3/29/25, 5:20 AM 4.12. Grow

If you do not want rounded corners, you can use the Rounded Rectangle command with a 0% radius.



4.13. Border



4. The "Select" Menu



4.13. Border

Figure 16.30. Example of creating a border from a selection



An image with a selection



After "Select Border"

The Select Border command creates a new selection along the edge of an existing selection in the current image. The edge of the current selection is used as a form and the new selection is then created around it. You enter the width of the border, in pixels or some other unit, in the dialog window. Half of the new border lies inside of the selected area and half outside of it.

4.13.1. Activating the Command

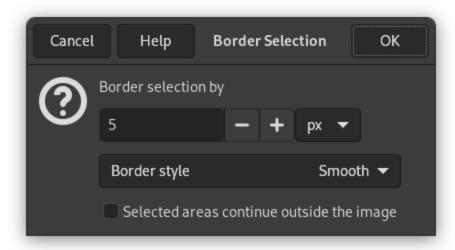
You can access this command from the main menu through Select \to Border.... If there is no selection, this menu entry is disabled.

Two conditions must be respected to use this command:

- The image must have an alpha channel.
- The original image must be created with the "Antialiasing" option checked in the selection tool that is used.

4.13.2. Description of the "Border" dialog window

Figure 16.31. The "Border" dialog window



Border selection by

Enter the width of the border selection in the box. The default units are pixels, but you can also choose the units with the drop-down menu.

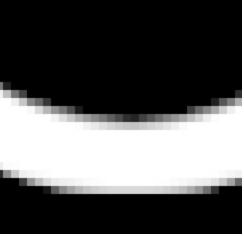
Border Style

- **Hard**: this option does not keep antialiasing. This can be useful in some cases.
- **Smooth**: this option keeps antialiasing. Note that "Smooth" does not create any antialiasing. That's why antialiasing must be added when creating the original selection. This option is the best one.
- **Feathered**: this option does the same things as "Hard", but instead of the resulting border being fully selected, it fades outwards. The result is not very good; if you want a feathered border, better is use one of the other modes, and then feather the result. It's there for history reason.

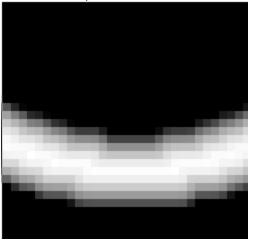
Figure 16.32. Border Style Comparison



"Hard" option. Selection editor, zoom 800%



"Smooth" option. Selection editor, zoom 800%



"Feathered" option. Selection editor, zoom 800%

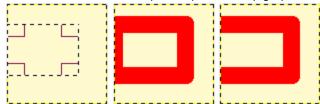
Selected areas continue outside the image

With this option enabled, an edge of an (usually rectangle) selection remains unchanged if it is aligned with an edge of the image; no new selection will be created around it.

Figure 16.33. Select border with and without "Selected areas continue outside the image"



Select border without (middle) and with (right) locked selection.



Same selections filled with red.







4.12. Grow

4

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4.14. Remove Holes

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4.14. Remove Holes



4. The "Select" Menu



4.14. Remove Holes

This command removes the holes of a selection. Holes are unselected or partially selected areas in the selection.

4.14.1. Activating the Command

You can access this command from the main menu through Select \rightarrow Remove Holes.

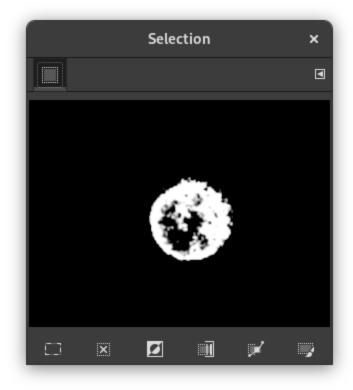
4.14.2. Example for Remove Holes

Figure 16.34. A selection and the Selection Editor



Selection using the Fuzzy Select tool.

3/29/25, 5:21 AM 4.14. Remove Holes



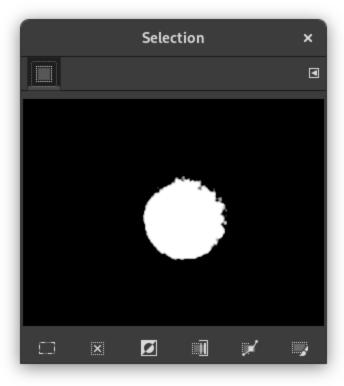
The Selection Editor shows several holes.

Figure 16.35. Remove Holes applied and the Selection Editor



Remove Holes applied.

3/29/25, 5:21 AM 4.14. Remove Holes



Holes disappeared.



https://docs.gimp.org/3.0/en/gimp-selection-flood.html

3/29/25, 5:21 AM 4.15. Distort

4.15. Distort





4.15. Distort

Figure 16.36. Example of using Distort on a selection



An image with a selection



After "Distort"

The "Distort" command deforms the selection contour.

4.15.1. Activating the Command

You can access this command from the main menu through Select \rightarrow Distort....

4.15.2. Description of the "Distort" Dialog Window

Figure 16.37. The "Distort" dialog

3/29/25, 5:21 AM 4.15. Distort



This command has several options which allow to increase or reduce the deformation. It is not possible to foresee the result and you have to experiment.

Threshold

A higher threshold shrinks the distorted selection. A lower threshold makes the selection bigger.

If the active selection has a regular shape (e.g. rectangle or ellipse selection), this option controls if the new outline is more inside the original selection or more outside the original selection.

Spread

A higher "Spread" increases the deformation.

Granularity

A higher "Granularity" increases the deformation.

Smooth

A higher "Smooth" decreases the deformation.

Deactivating Smooth horizontally or Smooth vertically increases the deformation.









4.16. Rounded Rectangle





4.16. Rounded Rectangle

Figure 16.38. Example of using Rounded rectangle on a selection



An image with a selection



After "Rounded rectangle"

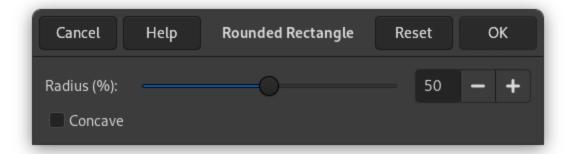
The "Rounded Rectangle" Script-Fu command converts an existing selection (rectangular, elliptical or other shape) into a rectangular selection with rounded corners. The corners can be curved toward the inside (concave) or toward the outside (convex). To do this, the command adds or removes circles at the corners of the selection.

4.16.1. Activating the Command

You can access this command from the main menu through Select → Rounded Rectangle....

4.16.2. Description of the "Rounded Rectangle" Dialog Window

Figure 16.39. The "Rounded Rectangle" dialog



Radius (%)

You can enter the radius of the rounded corner in percent by using a slider or a text field. This value is a percentage of the height or the width, whichever is less.

Concave

If you check this box, the corners will be concave (curving toward the inside), rather than convex (curving toward the outside).



4.17. Toggle Quick Mask



4. The "Select" Menu



4.17. Toggle Quick Mask

This command has the same action as clicking on the small button in the bottom left corner of the image. See <u>Quick Mask</u>.

4.17.1. Activating the Command

- You can access this command from the main menu through Select → Toggle Quick Mask.
- By pressing the | Shift |+ | Q | keyboard shortcut.







4.16. Rounded Rectangle



4.18. Save to Channel

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4.18. Save to Channel



4. The "Select" Menu



4.18. Save to Channel

The Save to Channel command saves the selection as a channel. The channel can then be used as a channel selection mask. You can find more information about them in the Channels Dialog section.

4.18.1. Activating the Command

- You can access this command from the main menu through Select → Save to Channel.
- You can also access this command from the bottom bar of the <u>Selection Editor</u>.







4.17. Toggle Quick Mask



4.19. To Path

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4.19. To Path



4. The "Select" Menu



4.19. To Path

The To Path command converts a selection into a path. The image does not seem to change, but you can see the new path in the <u>Paths Dialog</u>. By using the <u>Path tool</u> in the <u>Toolbox</u>, you can precisely adapt the outline of the selection. You can find further information regarding paths in the <u>Paths Dialog</u> section.

4.19.1. Activating the Command

- You can access this command from the main menu through Select \rightarrow To Path.
- You can also access this command from the bottom bar of the <u>Selection Editor</u>.
- You can also access this command from the <u>Paths Dialog</u> which offers a lot of <u>Advanced Options</u>.







4.18. Save to Channel



5. The "View" Menu

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The "View" MenuChapter 16. Menus

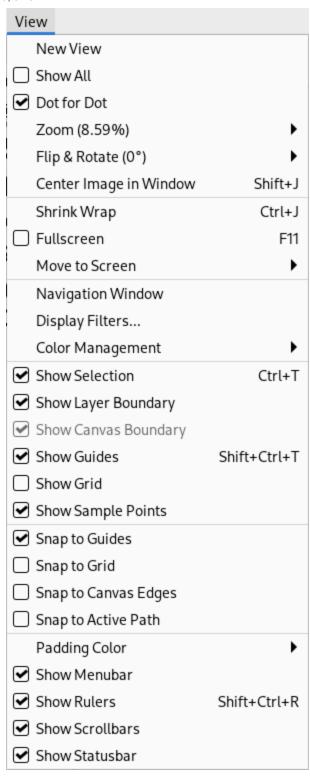




5. The "View" Menu

5.1. Introduction to the "View" Menu

Figure 16.40. Contents of the View menu



This section describes the View menu, which contains commands that affect the visibility or appearance of the image and various elements of the interface.



Note

Besides the commands described here, you may also find other entries in the menu. They are not part of GIMP itself, but have been added by third-party plug-ins. You can find information about the functionality of a plug-in by referring to its documentation.







3/29/25, 5:28 AM 5. The "View" Menu

4.19. To Path



Report a bug in GIMP Report a documentation error

5.2. New View

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5.2. New View



5. The "View" Menu



5.2. New View

The New View command creates a new image window for the current image, which you can set up differently from the existing display. You can create multiple views of any image, which are numbered .1, .2, etc., but only the zoom factor and other viewing options may be different. Any changes, other than viewing changes, which you make in one window also appear in the other displays which show the same image. The new views are not separate image files; they are simply different aspects of the same image. You might use multiple views, for example, if you were working on individual pixels at a high zoom factor. You could then see the effects your changes would have on the image at a normal size.

5.2.1. Activating the Command

You can access this command from the main menu through View → New View.



5. The "View" Menu





5.3. Show All

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5.3. Show All



5. The "View" Menu



5.3. Show All

The Show All command makes all pixels visible that are outside the canvas and that are normally not part of the image. This allows you to drag new layers and images outside the canvas temporarily to work with them.

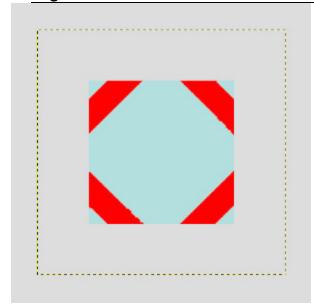
5.3.1. Activating the Command

You can access this command from the main menu through View \rightarrow Show All.

5.3.2. Basic principles about the "Show All" Command

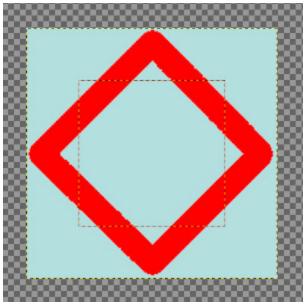
When you just open an image, the canvas size is the same as the image size, and applying the "Show all" command, of course, gives nothing since there is no pixel outside the canvas. So, enlarge the layer using the <u>Scale tool</u>. This default behavior of "Show All" being disabled when opening a new image window, can be changed in the <u>Image</u> Window Preferences, by changing the default for "Show All".

Figure 16.41. Show All



Layer enlarged. Command not checked.

3/29/25, 5:28 AM 5.3. Show All



Layer enlarged. Command checked.

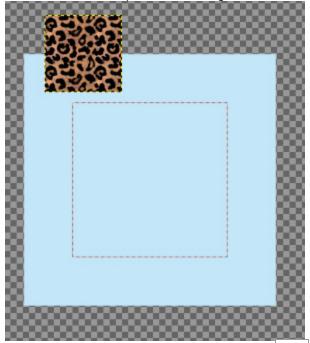
When the "Show all" command is unchecked, pixels spilling off the canvas boundary are not visible. When the command is checked, all pixels outside the canvas are visible (if the layer size is enough). You can see:

- The canvas boundary as a *red dotted line*. You can paint outside the canvas, in the limit of the layer. Changes made outside the canvas are not exported with the image, unless you enlarge the canvas size using <u>Canvas Size</u>.
- The layer boundary as a *yellow dotted line*.
- A large checkerboard area indicating there is no pixel.
 The checkerboard area is infinite: whatever the image window size, it persists.

5.3.3. Using the "Show All" command

We will clone from a new image onto the image.

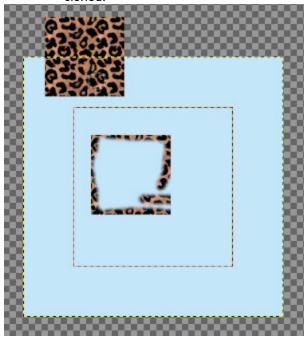
- Open your image, check "Show All", and enlarge layer.
- Open the new image. A new layer is created for this new image. Click and drag this new layer onto your image.
 Use Move tool to put the new image outside canvas.



Make new layer active. Use Clone tool and Ctrl -click on the new image to make it the source.

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• Make image layer active. Paint on your image to clone the source. You see that pixels in checkerboard area are cloned.





5.2. New View







5.4. Dot for Dot

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5.4. Dot for Dot



5. The "View" Menu



5.4. Dot for Dot

The Dot for Dot command enables and disables "Dot for Dot" mode. If it is enabled (checked) and the zoom factor is 100%, every pixel in the image is displayed as one pixel on the screen. If it is disabled, the image is displayed at its "real" size, the size it will have when it is printed.

For Dot for Dot mode to work properly, the resolution of the image must be the same as the screen resolution in the Preferences menu.

Enabling this mode is recommended if you are working on icons and web graphics. If you are working on images intended to be printed, you should disable Dot-for-Dot mode.

You can set the default for Dot-for-Dot mode in the Image Window Appearance Preferences.

5.4.1. Activating the Command

You can access this command from the main menu through View → Dot for Dot.

5.4.2. Example

Imagine the following image properties:

- Image size: 100×100 pixels
- Image resolution: 300 ppi (pixels per inch)
- Image displayed with Zoom=100%, "Dot for Dot" enabled:

100×100 pixels

Image displayed with Zoom=100%, "Dot for Dot" disabled:

100 pixels \div 300 ppi = 1/3 inch \cong 0.85 cm







5.5. Zoom

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5.5. Zoom



5. The "View" Menu



5.5. Zoom

The Zoom submenu contains various commands which affect the magnification of the image in the image window (zooming). Enlarging an image (zooming in) is useful if you need to work with high precision, making pixel-level image modifications or precise selections. On the other hand, reducing an image (zooming out) is handy for getting an overall impression of the image and seeing the results of changes which affect the entire image. Please note that zooming is not undoable, since it does not affect the image data, only the way it is displayed.



Tip

Besides the entries in this submenu, there is also a zoom pull-down menu at the bottom edge of the image window (if the <u>status bar</u> is displayed), where several preset zoom levels are available. You can also make settings regarding zooming in the <u>Navigation dialog</u>. You can also use the <u>Zoom</u> tool which lets you zoom a particular area of the image.

5.5.1. Activating the Submenu

You can access this submenu from the main menu through View \rightarrow Zoom. Note that the "Zoom" label on the "View" menu shows the current zoom factor, for example, Zoom (100%).

5.5.2. Contents of the "Zoom" submenu

The various "Zoom" submenu commands are described below, along with their default keyboard shortcuts, if any.

Revert Zoom

(Shortcut: \[\] [grave accent, "backtick"]) This command will reset the zoom factor to the previous value, which is also shown by this label, for example Revert Zoom (100%). If you never changed the zoom factor of the active image, this entry is disabled.

Zoom Out

(Shortcut: -) Each time "Zoom Out" is used, the zoom factor is decreased by about 30%. There is a minimum zoom level of 0.39%.

Zoom In

(Shortcut: +) Each time "Zoom In" is used, the zoom factor is increased by about 30%. The maximum possible zoom level is 25600%.



Note

The keyboard shortcut for "Zoom In" has been somewhat controversial because this is a very common operation and on English keyboards, the **Shift** key must be pressed to use it. (This is not the case for European keyboards.) If you would like to have a different keyboard shortcut, you can create a dynamic shortcut for it; see the help section for <u>User</u> Interface Preferences for instructions.

Fit Image in Window

(Shortcut: Shift + Ctrl + J). This command zooms the image to be as large as possible, while still keeping it completely within the window. There will usually be padding on two sides of the image, but not on all four sides.

Fill Window

This command zooms the image as large as possible without requiring any padding to be shown. This means that the image fits the window perfectly in one dimension, but usually extends beyond the window borders in the other dimension.

Zoom to Selection

This command zooms the image so that the selection fits the smallest dimension of the image window.

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A:B (X%)

With these commands, you can select one of the pre-set zoom levels. Each of the menu labels gives a ratio, as well as a percentage value. Please note that each zoom pre-set has its own keyboard shortcut. The current zoom is marked with a large dot.

Other zoom factor...

This command brings up a dialog which allows you to choose any zoom level you would like, within the range of 1:256 (0.39%) to 256:1 (25600%).



Tip

When you are working at the pixel level, you can use the <u>New view</u> command. This allows you to see what is happening to the image at its normal size at the same time.







5.4. Dot for Dot



5.6. Flip & Rotate (0°)

5.6. Flip & Rotate (0°)



5. The "View" Menu



5.6. Flip & Rotate (0°)

You can access this submenu from the menu: View \rightarrow Flip & Rotate (0°),

These commands change the view only, not on the image itself. If you want to change the image, go to: menulmage - Transform.

5.6.1. Reset Flip & Rotate

This command restores the view of the image to its original state. Activate:

- From the menu: View → Flip & Rotate (0°) → Reset Flip & Rotate.
- Using the shortcut key !

5.6.2. "Flip Horizontally" and "Flip Vertically"

These commands change the view by flipping the image horizontally or vertically. If one of these is enabled you will see a check mark in front of the command.

Activate:

- View → Flip & Rotate (0°) → Flip Horizontally.
- View → Flip & Rotate (0°) → Flip Vertically.

5.6.3. Rotate 15° clockwise

This command rotates the view of the image 15° clockwise. Activate:

• From the menu: View → Flip & Rotate (0°) → Rotate 15° clockwise.

5.6.4. Rotate 15° counter-clockwise

This command rotates the view of the image 15° counter-clockwise. Activate:

• From the menu: View → Flip & Rotate (0°) → Rotate 15° counter-clockwise.

5.6.5. Rotate 90° clockwise

This command rotates the view of the image 90° clockwise. Activate:

From the menu: View → Flip & Rotate (0°) → Rotate 90° clockwise.

5.6.6. Rotate 90° counter-clockwise

This command rotates the view of the image 90° counter-clockwise. Activate:

• From the menu: View → Flip & Rotate (0°) → Rotate 90° counter-clockwise.

5.6.7. Rotate 180°

This command rotates the view of the image 180°. Activate:

From the menu: View → Flip & Rotate (0°) → Rotate 180°.

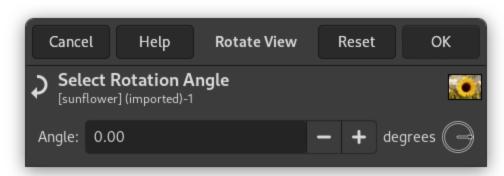
5.6.8. Other rotation angle...

This command opens a dialog that allows you to set the exact angle of rotation for the view. You can set the angle in the numeric input field, or drag the pointer in the circle to the desired angle.

Activate:

• From the menu: View \rightarrow Flip & Rotate (0°) \rightarrow Other rotation angle....

Figure 16.42. The "Select Rotation Angle" dialog











5.7. Center Image in Window



5. The "View" Menu



5.7. Center Image in Window

The Center Image in Window command scrolls the image so that it is exactly centered in the window.

5.7.1. Activating the Command

- You can access this command from the main menu through View \rightarrow Center Image in Window,
- or by using the keyboard shortcut | Shift |+ J |







5.6. Flip & Rotate (0°)



5.8. Shrink Wrap

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5.8. Shrink Wrap



5. The "View" Menu



5.8. Shrink Wrap

The Shrink Wrap command resizes the window so that it is exactly the same size as the image at the current zoom factor. If the image doesn't completely fit on the screen, the image window is enlarged so that the largest possible part of the image is shown. Please note that GIMP will do this automatically if you set the "Resize window on zoom" and "Resize window on image size change" options in the Image Window page of the Preferences dialog.



Note

Please note also that the behavior described here is not performed by GIMP itself, but by the "window manager", a part of the operating system of your computer. For that reason, the functionality described may be different on your computer, or in the worst case, might not be available at all.

5.8.1. Activating the Command

- You can access this command from the main menu through View → Shrink Wrap,
- or by using the keyboard shortcut | Ctrl |+ J |.







5.7. Center Image in Window



5.9. Full Screen

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5.9. Full Screen



5. The "View" Menu



5.9. Full Screen

The Fullscreen command enables and disables displaying the image window on the entire screen. When it is enabled, the image window takes up the whole screen, but the image stays the same size. When you enable full-screen mode, the menubar may not be displayed, but if this happens, you can right-click on the image to access the main menu. You can set the default appearance for full-screen mode in the Preferences menu.

Pressing the **Tab** key toggles the visibility of all present docks.



Note

If you use GIMP on an Apple computer, full-screen mode may not work, since Apple doesn't provide the necessary functionality. Instead, you can maximize the image window by clicking on the *Green Button*, so the image occupies most of the screen.

5.9.1. Activating the Command

- You can access this command from the main menu through View → Full Screen,
- or by using the keyboard shortcut F11
- In multi-window mode, you can also get it by double-clicking on the title bar of the image window.







5.8. Shrink Wrap



5.10. Move to Screen

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5.10. Move to Screen



5. The "View" Menu



5.10. Move to Screen

The Move to Screen submenu allows to display GIMP on a different screen connected to your device.

5.10.1. Activating the Submenu

• You can access this submenu from the main menu through View → Move to Screen .

5.10.2. Contents of the "Move to Screen" submenu

Open Display...

This is an experimental functionality to choose a different display.

Available screen(s)

The exact name of the menu entry depends on the display server software of your operating system (for example Screen wayland-0 on a Linux system running Wayland).

If more than one screen is listed, you can select a different screen on which you want GIMP to be shown.









5.11. Navigation Window

5.11. Navigation Window



5. The "View" Menu



5.11. Navigation Window

The Navigation Window command opens the <u>navigation window</u>. This allows you to easily navigate through the image, to set zoom levels and to move the visible parts of the image. You can find more information about using it in the <u>Navigation dialog</u> chapter.

5.11.1. Activating the Command

- You can access this command from the main menu through View \rightarrow Navigation Window.
- You can also access it more rapidly by clicking on the A icon in the lower right corner of the image window.







5.10. Move to Screen



5.12. Display Filters

5.12. Display Filters





5.12. Display Filters

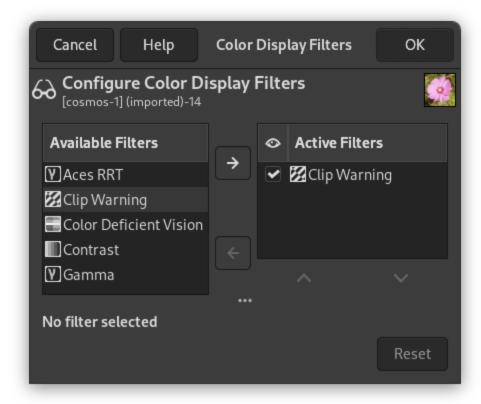
This command shows a dialog window when executed. This window can be used to manage the display filters and their options. Display filters are not to be confused with the filters in the filters-menu. Display filters do not alter the image data, but only one display of it. You can imagine display filters like big panes before your screen. They change your perception of the image. This can be useful for things like soft-proofing prints, controlling the color management but also simulation of color deficient vision.

5.12.1. Activating the Command

You can access this command from the main menu through View → Display Filters....

5.12.2. Description of the "Display Filters" Dialog

Figure 16.43. The "Color Display Filters" dialog

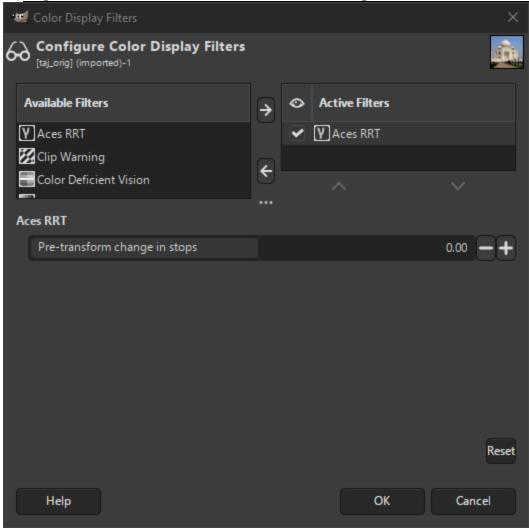


This dialog has two small selectboxes. The left selectbox displays the Available Filters. You can move a filter to the right selectbox by selecting it and clicking on the right arrow button. The Active Filters window on the right displays filters you have chosen and which will be applied if the adjacent box is checked. You can move filters from the right selectbox to the left selectbox by using the left arrow button. If you select a filter by clicking on its name, its options are displayed below the two selectboxes.

- Simulation of deficient vision (<u>Section 5.12.5, "Color Deficient Vision"</u>; <u>Section 5.12.6, "Contrast"</u>)
- Digital photography helper (<u>Section 5.12.4, "Clip Warning"</u>)
- Others (Section 5.12.7, "Gamma")

5.12.3. Aces RRT

Figure 16.44. The "Aces RRT" dialog



ACES (Academy Color Encoding Specification) is a specification that defines a color encoding system created to standardize how color is managed to create an accurate color workflow. Within that standard, a RRT (Reference Rendering Transform) converts the colors from the ACES color space to the used color space in your image.

5.12.3.1. Options

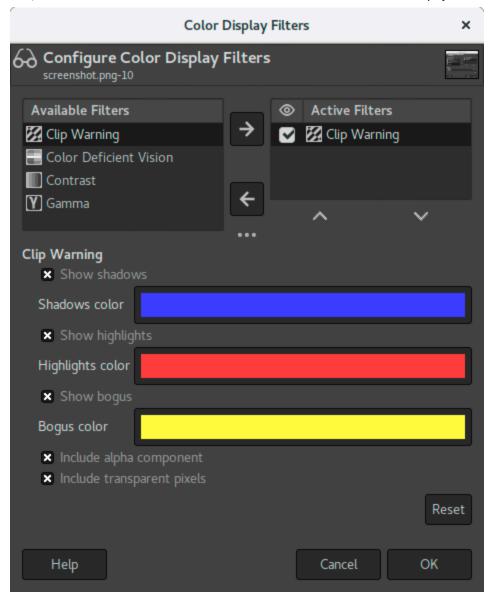
Pre-transform change in stops

This value between -10.0 and 10.0 influences the brightness of the result.

5.12.4. Clip Warning

Figure 16.45. The "Clip Warning" dialog

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This filter allows to visualize underexposed and overexposed areas of a photo with user-configurable colors. For now, it's mostly geared towards images where colors are stored with floating point precision. You will mostly benefit from this, if you work on 16-/32-bit per channel float images such as EXR and TIFF.

5.12.4.1. Options

Show shadows

Enable visualization for underexposed pixels (less than 0 in 32-bit float mode).

Shadows color

User-configurable color that will be used to fill underexposed pixels.

Show highlights

Enable visualization for overexposed pixels (more than 1 in 32-bit float mode).

Highlights color

User-configurable color that will be used to fill overexposed pixels.

Show bogus

Enable visualization for not-a-number (NaN) pixels, only visible when there is a division by zero error and suchlike.

Bogus color

User-configurable color that will be used to fill NaN pixels.

Include alpha component

When enabled, include the alpha component in the warning.

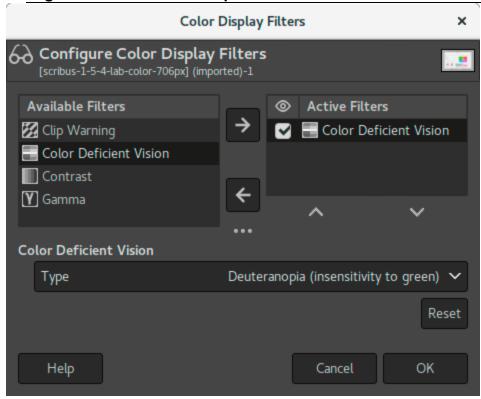
Include transparent pixels

When enabled, include fully transparent pixels in the warning.

5.12.5. Color Deficient Vision

The images you create, we hope, will be seen by many people on many different systems. The image which looks so wonderful on your screen may look somewhat different to people with sight deficiencies or on a screen with different settings from yours. Some information might not even be visible.

Figure 16.46. Description of the "Color Deficient Vision" dialog



5.12.5.1. Options

Color Deficiency Type

In this drop-down menu you can select from among:

Protanopia^[7] (insensitivity to red)

Protanopia is a visual deficiency of the color red. It's the well-known daltonism (red-green color blindness). Daltonism occurs fairly frequently in the population.

Protanopia is actually more complex than this; a person with this problem cannot see either red or green, although he is still sensitive to yellow and blue. In addition, he has a loss of luminance perception and the hues shift toward the short wavelengths.

Deuteranopia (insensitivity to green)

With deuteranopia, the person has a deficiency in green vision. Deuteranopia is actually like protanopia, because the person has a loss of red and green perception, but he has no luminance loss or hue shift.

Tritanopia (insensitivity to blue)

With tritanopia, the person is deficient in blue and yellow perception, although he is still sensitive to red and green. He lacks some perception of luminance, and the hues shift toward the long wavelengths.

5.12.5.2. Examples

Figure 16.47. Example of protanopia

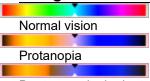


Original image



A red-blind person cannot see the red (255,0,0) text on a black (0,0,0) background.

Figure 16.48. Examples of the three types of vision deficiencies in one image



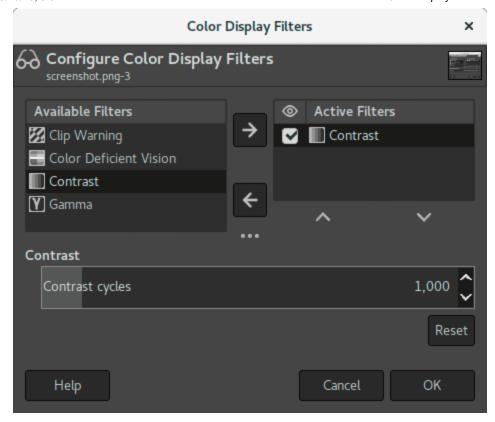
Deuteranopia; in deuteranopia, yellow is shifted toward red.

Tritanopia; in tritanopia, green is slightly represented in the blue range.

5.12.6. Contrast

Figure 16.49. The "Contrast" dialog

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Here, we are back in the medical domain. "Contrast Sensitivity" is the capacity of the visual system to distinguish slight differences in contrast. Some people with cataracts (which means that the lens has opaque crystals that scatter light over the retina) or retinal disease (for instance, due to diabetes, which destroys the rods and cones) have a deficiency in sensitivity to contrast: for example, they would have difficulties distinguishing spots on a dress. If you are interested in this subject, you can browse the Web for "contrast sensitivity".

5.12.6.1. Options

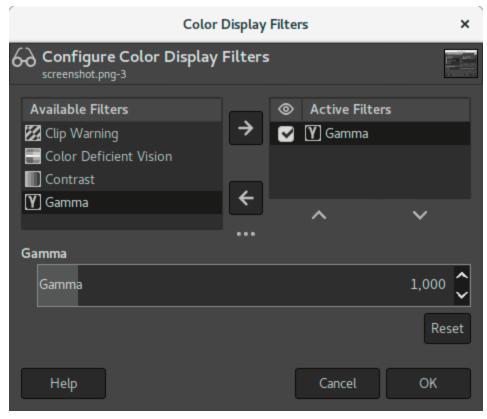
Contrast Cycles

With the "Contrast" Filter, you can see the image as if you were suffering from cataracts. You may have to increase the contrast of the image so that your grandmother can see it well. In most cases, only very low values of the Contrast Cycles parameter are of interest. Higher values create a side-effect which doesn't interest us here: if you increase the luminosity value above 255, the complementary color appears.

5.12.7. Gamma

Figure 16.50. The "Gamma" dialog

3/29/25, 5:31 AM 5.12. Display Filters



The correspondence between electrical intensity and color brightness is not exact and it depends upon the device (the camera, the scanner, the monitor, etc.). "Gamma" is a coefficient used to correct this correspondence. Your image must be visible in both dark and bright areas, even if it is displayed on a monitor with too much luminence or not enough. The "Gamma" Display Filter allows you to get an idea of the appearance of your image under these conditions.



Tip

In case you want not only to change the gamma of the current display, but the change the gamma within the image itself, you can find a description in <u>Section 8.10</u>, <u>"Levels"</u>.

[7] Greek: proto: first (color in the RGB Color System): an: negation; op: eye, vision.









5.13. Color Management

4

5.13. Color Management



5. The "View" Menu



5.13. Color Management



Note

For color profile related actions of an image file, see <u>Section 6.8, ""Color Management" Submenu"</u>.

For GIMP's general Color Management preferences, see <u>Section 6.4,</u> <u>"Color Management"</u>.

This menu item opens a submenu allowing you to manage color display management on your system. These settings only affect the current display of an image. You can have multiple views of an image, each with their own color management view settings.

5.13.1. Activating the Submenu

You can access this submenu from the main menu through View → Color Management.

5.13.2. The Contents of the "Color Management" Submenu

- Color-Manage this View
- Proof Colors
- Display Rendering Intent
- Black Point Compensation
- Mark Out Of Gamut Colors
- <u>As in Preferences</u>











5.14. Color-Manage this View



5. The "View" Menu



5.14. Color-Manage this View

Color-Manage this View is enabled by default and should usually not be changed. When enabled it will interpret the current image according to the color profile attached to it and possibly also depending on the monitor profile if set. When Proof Colors is enabled, that will also influence this view. Note that you can have several views of the same image with different settings to be able to compare the outcome. When this setting is disabled, your image will be interpreted as if it was sRGB.

5.14.1. Activating the Command

You can access this command from the main menu through View \rightarrow Color Management \rightarrow Color-Manage this View.



5.13. Color Management





5.15. Proof Colors

3/29/25, 5:32 AM 5.15. Proof Colors

5.15. Proof Colors



5. The "View" Menu



5.15. Proof Colors

Enabling Proof Colors allows you to interpret the colors of this view of your image using a soft-proofing profile that you can set using <u>Soft-Proof Profile</u>.

5.15.1. Activating the Command

You can access this command from the main menu through View \rightarrow Color Management \rightarrow Proof Colors.







5.14. Color-Manage this View



5.16. Display Rendering Intent

5.16. Display Rendering Intent



5. The "View" Menu



5.16. Display Rendering Intent

The Display Rendering Intent lets you choose the rendering intent for the display. For more details about the available choices, see Rendering Intent.

Relative colorimetric is usually the best choice (default). Unless you use a LUT monitor profile (most monitor profiles are matrix), choosing perceptual intent actually gives you relative colorimetric.

To get an idea how your image will look with the chosen rendering intent enable View \rightarrow Color Management \rightarrow Proof Colors.

5.16.1. Activating the Submenu

You can access this submenu from the main menu through View \rightarrow Color Management \rightarrow Display Rendering Intent; then choose the option you prefer.



5.15. Proof Colors







5.17. Black Point Compensation

5.17. Black Point Compensation



5. The "View" Menu



5.17. Black Point Compensation

When enabled, Black Point Compensation will be used for the current display of the image.

Black Point Compensation is used to compensate for differences in black levels available on different devices. When enabled, it makes adjustments based on the differences between the color profile of the image and that of the output device, as represented by the soft-proof profile.

To get an idea how your image will look enable View \rightarrow Color Management \rightarrow Proof Colors.

5.17.1. Activating the Command

You can access this command from the main menu through View \to Color Management \to Black Point Compensation.







5.16. Display Rendering Intent



5.18. Mark Out Of Gamut Colors

5.18. Mark Out Of Gamut Colors



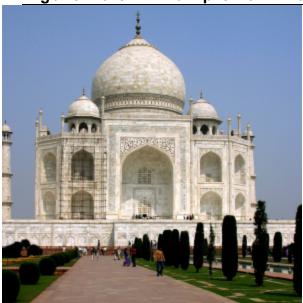
5. The "View" Menu



5.18. Mark Out Of Gamut Colors

5.18.1. Overview

Figure 16.51. Example for "Mark Out of Gamut"



Original image



Image with "Mark Out Of Gamut" and "Soft Proof" enabled in the view menu, and the image's soft-proofing profile set to PSO Uncoated v3 (a CMYK profile).

When enabled, Mark Out Of Gamut Colors will mark all pixels that are out of gamut in the current display of your image with a specific color that you can set in the <u>Soft-Proofing Preferences</u> that can be found in the Color Management section.

This allows you to see which parts of your image will not display correctly on your target device (often a printer). To get an idea how your image will look enable $View \rightarrow Color Management \rightarrow Proof Colors$.

5.18.2. Activating the Command

You can access this command from the main menu through View \rightarrow Color Management \rightarrow Mark Out Of Gamut Colors.

+

5.17. Black Point Compensation





5.19. As in Preferences

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5.19. As in Preferences



5. The "View" Menu



5.19. As in Preferences

The As in Preferences command for the color management view resets the view to the defaults as set in your <u>Color Management Preferences</u>.

5.19.1. Activating the Command

You can access this command from the main menu through View \rightarrow Color Management \rightarrow As in Preferences.







5.18. Mark Out Of Gamut Colors



5.20. Show Selection

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5.20. Show Selection



5. The "View" Menu



5.20. Show Selection

The Show Selection command enables and disables displaying the dotted line surrounding the selection in the image window. Please note that the selection still exists, even if displaying this line is disabled.

You can set the default for displaying the selection in the <u>Image Window Appearance Preferences</u>.

5.20.1. Activating the Command

- You can access this command from the main menu through View \rightarrow Show Selection,
- or by using the keyboard shortcut | Ctrl |+ T |.







5.19. As in Preferences



5.21. Show Layer Boundary

5.21. Show Layer Boundary



5. The "View" Menu



5.21. Show Layer Boundary

The Show Layer Boundary command enables and disables displaying the yellow dotted line that surrounds a layer in the image window. The dotted line is actually only visible when the layer is smaller than the image window. When the layer is the same size as the image window, the layer boundary is obscured by the image border. You can set the default for the layer boundary in the Image Window Appearance Preferences.

5.21.1. Activating the Command

• You can access this command from the main menu through View → Show Layer Boundary.







5.20. Show Selection



5.22. Show Canvas Boundary

5.22. Show Canvas Boundary



5. The "View" Menu



5.22. Show Canvas Boundary

The Show Canvas Boundary command enables or disables displaying the canvas boundary in the image window. You can set the default for the canvas boundary in the Image Window Appearance Preferences.

5.22.1. Activating the Command

• You can access this command from the main menu through View → Show Canvas Boundary.







5.21. Show Layer Boundary



5.23. Show Guides

3/29/25, 5:34 AM 5.23. Show Guides

5.23. Show Guides



5. The "View" Menu



5.23. Show Guides

The Show Guides command enables and disables displaying of <u>Guides</u> in the image window. You can set the default for the guides in the <u>Image Window Appearance Preferences</u>.

5.23.1. Activating the Command

- You can access this command from the main menu through View → Show Guides,
- or by using the keyboard shortcut | Shift |+ Ctrl |+ T |.







5.22. Show Canvas Boundary



5.24. Show Grid

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5.24. Show Grid



5. The "View" Menu



5.24. Show Grid

By using the Show Grid command, you can enable and disable displaying the grid. When you enable it, the grid overlays the image and makes it easier for you to line up selected image elements. You can set the default for the grid in the Image Window Appearance Preferences.



Tip

See also the Configure Grid command and the Snap to Grid command.

5.24.1. Activating the Command

You can access this command from the main menu through View → Show Grid.







5.23. Show Guides



5.25. Show Sample Points

5.25. Show Sample Points



5. The "View" Menu



5.25. Show Sample Points

This command enables and disables showing the sample points in the image window. Sample points are used to display color information in the <u>sample points dialog</u>.

You can set the default for showing sample points in the <u>Image Window Appearance Preferences</u>.

5.25.1. Activating the Command

• You can access this command from the main menu through View → Show Sample Points.







5.24. Show Grid



5.26. Snap to Guides

3/29/25, 5:35 AM 5.26. Snap to Guides

5.26. Snap to Guides



5. The "View" Menu



5.26. Snap to Guides

The Snap to Guides command enables and disables snap to guides. When snap to guides is enabled, the guides you set (see <u>Show Guides</u>) almost seems magnetic; when you move a layer or selection, the guides appear to pull on it when it approaches. This is enormously useful for accurate placement of image elements.

5.26.1. Activating the Command

• You can access this command from the main menu through View → Snap to Guides.







5.25. Show Sample Points



5.27. Snap to Grid

3/29/25, 5:35 AM 5.27. Snap to Grid

5.27. Snap to Grid



5. The "View" Menu



5.27. Snap to Grid

The Snap to Grid command enables and disables snap to grid. When snap to grid is enabled, the grid you set (see Show Grid) almost seems magnetic; when you move a layer or selection, the grid points appear to pull on it when it approaches. This is enormously useful for accurate placement of image elements.

5.27.1. Activating the Command

• You can access this command from the main menu through View \rightarrow Snap to Grid.







5.26. Snap to Guides



5.28. Snap to Canvas

3/29/25, 5:35 AM 5.28. Snap to Canvas

5.28. Snap to Canvas



5. The "View" Menu



5.28. Snap to Canvas

If this option is enabled, when you move a selection or a layer, they appear to pull on the canvas edges when it approaches. This is useful for accurate placement of image elements.



Note

Canvas edges are usually mingled with image edges: the canvas has, then, the same size as the image. But you can change canvas size in Image \rightarrow Canvas Size.

5.28.1. Activating the Command

You can access this command from the main menu through View → Snap to Canvas.







5.27. Snap to Grid



5.29. Snap to Active Path

5.29. Snap to Active Path



5. The "View" Menu



5.29. Snap to Active Path

If this option is enabled, when you move a selection or a layer, they appear to pull on the next anchor point of the active path when it approaches. This is useful for accurate placement of image elements.

5.29.1. Activating the Command

• You can access this command from the main menu through View → Snap to Path.







5.28. Snap to Canvas



5.30. Snap to Bounding Boxes

5.30. Snap to Bounding Boxes



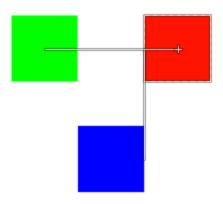
5. The "View" Menu



5.30. Snap to Bounding Boxes

If this option is enabled, moving e.g. layers will snap it to the bounding box (edge or center) of other layers. This makes it easy to align them horizontally or vertically. Note that this is not restricted to layers, you can also use it with e.g. Paths.

Figure 16.52. Example of bounding box snapping



This example shows the red layer snapping horizontally to the center of the green layer and vertically to the right edge of the blue layer.

5.30.1. Activating the Command

You can access this command from the main menu through View → Snap to Bounding Boxes.



5.29. Snap to Active Path





5.31. Snap to Equidistance

5.31. Snap to Equidistance



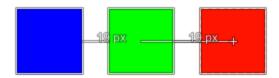
5. The "View" Menu



5.31. Snap to Equidistance

If this option is enabled, tools will snap to the equidistance between three bounding boxes. What this means is, that when you have three layers, and you want the same distance between each layer. Move the third layer to approximately the same position as the other two layers. If it is close enough, it will snap to the correct location and show the amount of pixels that are in between on both ends. This is useful for accurate placement of image elements.

Figure 16.53. Example of equidistance snapping



This example shows the red layer snapping to the same distance from the green layer (19 pixels) as the distance between the green and blue layer.

5.31.1. Activating the Command

You can access this command from the main menu through View → Snap to Equidistance.







5.30. Snap to Bounding Boxes



5.32. Padding Color

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5.32. Padding Color



5. The "View" Menu



5.32. Padding Color

You can change the color of the canvas which surrounds the image by using the Padding Color command. The canvas is the surface the image lies on. It looks like a frame around the image in the image window. This is just a matter of personal preference, since the padding color does not have any effect on the image itself. Please note that this color is not the same as the color used by the Fill tool.

5.32.1. Activating the Submenu

You can access this submenu from the main menu through View \rightarrow Padding Color.

5.32.2. "Padding Color" Options

From Theme

The color of the theme defined in the Theme Preferences is used.

Light Check Color, Dark Check Color

The Check style representing transparency, which is defined in the Display Preferences, is used.

Custom Color...

Opens the Color Selector window to let you choose a color to use.

Keep Padding in "Show All" Mode

In the <u>"Show All"</u> mode you can see pixels outside the canvas. When this option is not checked, the area outside the canvas is filled with a checkerboard pattern, even if you have selected a custom padding color. When the option is checked, the canvas has the custom padding color.

As in Preferences

The Custom padding color selected in the Image Window Appearance Preferences is used.







5.31. Snap to Equidistance



5.33. Show Menubar

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5.33. Show Menubar



5. The "View" Menu



5.33. Show Menubar

The Show Menubar command enables and disables displaying the menubar. It may be useful to disable it if you are working in <u>full-screen mode</u>. If the menubar is not displayed, you can right-click on the image to access the menubar entries.

You can set the default for the menubar in the <u>Image Window Appearance Preferences</u>.

5.33.1. Activating the Command

• You can access this command from the main menu through View \rightarrow Show Menubar.







5.32. Padding Color



5.34. Show Rulers

3/29/25, 5:37 AM 5.34. Show Rulers

5.34. Show Rulers



5. The "View" Menu



5.34. Show Rulers

The Show Rulers command enables and disables displaying the rulers. It may be useful to disable them if you are working in <u>full-screen mode</u>.

You can set the default for the rulers in the <u>Image Window Appearance Preferences</u>.

5.34.1. Activating the Command

- You can access this command from the main menu through View \rightarrow Show Rulers,
- or by using the keyboard shortcut | Shift |+ Ctrl |+ R |







5.33. Show Menubar



5.35. Show Scrollbars

3/29/25, 5:37 AM 5.35. Show Scrollbars

5.35. Show Scrollbars



5. The "View" Menu



5.35. Show Scrollbars

The Show Scrollbars command enables and disables displaying the scrollbars. It may be useful to disable them if you are working in <u>full-screen mode</u>.

You can set the default for the scrollbars in the Image Window Appearance Preferences.

5.35.1. Activating the Command

You can access this command from the main menu through View → Show Scrollbars.







5.34. Show Rulers



5.36. Show Statusbar

3/29/25, 5:37 AM 5.36. Show Statusbar

5.36. Show Statusbar



5. The "View" Menu



5.36. Show Statusbar

The Show Statusbar command enables and disables displaying the status bar. It may be useful to disable it when you are working in <u>full-screen mode</u>.

You can set the default for the status bar in the Image Window Appearance Preferences.

5.36.1. Activating the Command

You can access this command from the main menu through View → Show Statusbar.







5.35. Show Scrollbars



6. The "Image" Menu

6. The "Image" Menu



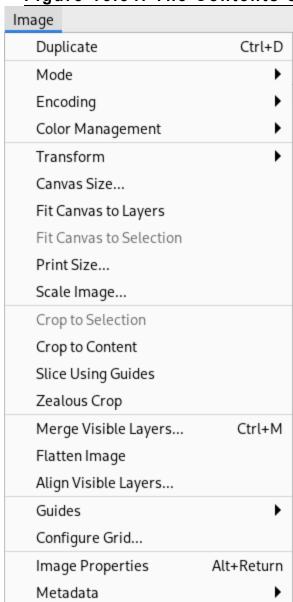




6. The "Image" Menu

6.1. Overview

Figure 16.54. The Contents of the "Image" Menu



The Image menu contains commands which use or affect the entire image in some way, not just the active layer or some other specific part of the image.



Note

Besides the commands described here, you may also find other entries in the menu. They are not part of GIMP itself, but have been added by third-party plug-ins. You can find information about the functionality of a plug-in by referring to its documentation.

6. The "Image" Menu



5.36. Show Statusbar







6.2. Duplicate

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6.2. Duplicate



6. The "Image" Menu



6.2. Duplicate

The Duplicate command creates a new image which is an exact copy of the current one, with all of its layers, channels and paths. The GIMP Clipboard and the History are not affected.



Note

Don't mistake a duplicated image for a new view of this image. In a View \rightarrow New View, all changes are passed on the original image.

6.2.1. Activating the Command

- You can access this command from the main menu through Image → Duplicate,
- or by using the keyboard shortcut Ctrl + D.







6. The "Image" Menu



6.3. "Mode" Submenu

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6.3. "Mode" Submenu



6. The "Image" Menu



6.3. "Mode" Submenu

The Mode submenu contains commands which let you change the color mode of the image. There are three modes.

6.3.1. Activating the Submenu

You can access this submenu from the main menu through Image \rightarrow Mode.

6.3.2. The Contents of the "Mode" Submenu

- RGB
- Grayscale
- <u>Indexed</u>







6.2. Duplicate



6.4. RGB mode

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6.4. RGB mode



6. The "Image" Menu



6.4. RGB mode

The RGB command converts your image to RGB mode. See the RGB description in the Glossary for more information. Normally, you work in this mode, which is well-adapted to the screen. It is possible to convert an RGB image to Grayscale or Indexed mode, but be careful: once you have saved the image, you can no longer retrieve the RGB colors, so you should work on a copy of your image.

6.4.1. Activating the Command

You can access this command from the main menu through Image → Mode → RGB.







6.3. "Mode" Submenu



6.5. Grayscale mode

6.5. Grayscale mode



6. The "Image" Menu



6.5. Grayscale mode

You can use the Grayscale command to convert your image to grayscale. The resulting grayscale image will have a single channel composed of various shades of gray ranging from black to white.

The number of available tonal steps between black and white depends on the image precision: At integer precision:

- An 8-bit integer grayscale image provides 255 available tonal steps from 0 (black) to 255 (white).
- A 16-bit integer grayscale image provides 65535 available tonal steps from 0 (black) to 65535 (white).
- A 32-bit integer grayscale image theoretically will provide 4294967295 tonal steps from 0 (black) to 4294967295 (white). But as high bit depth GIMP does all internal processing at 32-bit floating point precision, the actual number of steps will be no more than the number of tonal steps available in a 32-bit floating point image.

At floating point precision: the available number of tonal steps in a grayscale image depends on the specified bit depth (8-bit, 16-bit, or 32-bit) and the type of floating point that is requested by the program (see <u>Floating-point arithmetic</u> for details).

6.5.1. Activating the Command

You can access this command from the main menu through Image \rightarrow Mode \rightarrow Grayscale.







6.4. RGB mode



6.6. Indexed mode

3/29/25, 5:47 AM 6.6. Indexed mode

6.6. Indexed mode



6. The "Image" Menu



6.6. Indexed mode

The Indexed command converts your image to indexed mode. See <u>indexed colors</u> in the Glossary for more information about Indexed Color Mode.

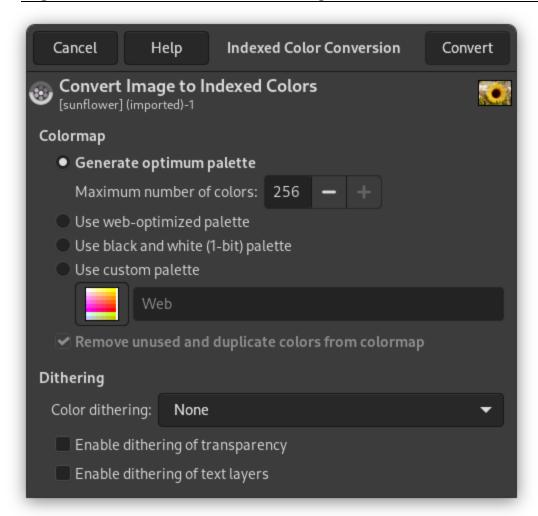
6.6.1. Activating the Command

You can access this command from the main menu through Image → Mode → Indexed....

6.6.2. The "Convert Image to Indexed Colors" dialog

The Indexed command opens the Convert Image to Indexed Colors dialog.

Figure 16.55. The "Convert Image to Indexed Colors" dialog



3/29/25, 5:47 AM 6.6. Indexed mode

Generate optimum palette: This option generates the best possible palette with a default maximum number
of 256 colors (classic GIF format). You can reduce this *Maximum Number of Colors*, although this may
create unwanted effects (color banding) on smooth transitions. You may be able to lessen the unwanted
effects by using dithering, however.

- Use web-optimized palette: use a palette that is optimized for the web.
- Use black and white (1-bit) palette: This option generates an image which uses only two colors, black and white.
- Use custom palette: This button lets you select a custom palette from a list. The number of colors is indicated for each palette. The "Web" palette, with 216 colors, is the "web-safe" palette. It was originally created by Netscape to provide colors that would look the same on both Macs and PCs, and Internet Explorer 3 could manage it. Since version 4, MSIE handles a 212 color palette. The problem of color similarity between all platforms has not been solved yet and it probably never will be. When designing a web page, you should keep two principles in mind: use light text on a dark background or dark text on a light background, and never rely on color to convey information.

Some colors in the palette may not be used if your image does not have many colors. They will be removed from the palette if the Remove unused colors from final palette option is checked.

Dithering Options

Since an indexed image contains 256 colors or less, some colors in the original image may not be available in the palette. This may result in some blotchy or solid patches in areas which should have subtle color changes. The dithering options let you correct the unwanted effects created by the Palette Options.

A dithering filter tries to approximate a color which is missing from the palette by instead using clusters of pixels of similar colors which are in the palette. When seen from a distance, these pixels give the impression of a new color. See the Glossary for more information on dithering.

Three filters (plus "None") are available. It is not possible to predict what the result of a particular filter will be on your image, so you will have to try all of them and see which works best. The "Positioned Color Dithering" filter is well adapted to animations.

Figure 16.56. Example: full color, with no dithering

This is an example image with a smooth transition in RGB Mode.

Figure 16.57. Example: four colors, with no dithering

The same image, after being transformed to four indexed colors, without dithering.

Figure 16.58. Example: Floyd-Steinberg (normal)

The same image, with four indexed colors and "Floyd-Steinberg (normal)" dithering.

Figure 16.59. Example: Floyd-Steinberg (reduced color bleeding)

The same image, with four indexed colors and "Floyd-Steinberg (reduced color bleeding)" dithering.

In a GIF image, transparency is encoded in 1 bit: transparent or not transparent. To give the illusion of partial transparency, you can use the Enable dithering of transparency option. However, the <u>Semi-flatten</u> plug-in may give you better results.

Enable dithering of text layers: dithering text layers will make them uneditable.

3/29/25, 5:47 AM 6.6. Indexed mode



Note

You can edit the color palette of an indexed image by using the <u>Colormap</u> Dialog.



1



6.5. Grayscale mode



6.7. "Encoding" Submenu

6.7. "Encoding" Submenu



6. The "Image" Menu



6.7. "Encoding" Submenu

The Encoding submenu contains commands which let you change the encoding of the image. These options affect the precision and channel encoding used for storing the image in RAM during processing.

6.7.1. Activating the Submenu

You can access this submenu from the main menu through Image → Encoding.

6.7.2. The Contents of the "Encoding" Submenu

The Encoding submenu is divided into two parts: precision and channel encoding.

Precision

The precision at which image data is stored is a function of the bit depth (8-bit vs 16-bit vs 32-bit) and whether the data is stored as integer data or floating point data. The following choices are available:

1. Integer precision options

8-bit integer



Note

When choosing to convert an image which has a 32-bit floating point precision to 8-bit integer, a <u>conversion dialog</u> will open that will ask you to choose dithering settings.

- 16-bit integer
- 32-bit integer

2. Floating point precision options

- 16-bit floating point
- 32-bit floating point

Channel Encoding (Gamma)

The Encoding menu also allows you to choose a <u>channel encoding</u> for the image data (sometimes referenced as gamma). Currently there are two choices:

- Linear light, which encodes the channel data using the linear gamma TRC.
- Non-linear, which encodes the channel data in non-linear gamma using the chosen color profile for the image.

6.7.3. Choosing the image precision and channel encoding



Note

Regardless of which options you choose in the Encoding menu, all internal processing is done at 32-bit floating point precision, and most editing operations are done using Linear light channel encoding.

Which Encoding options should you choose? In a nutshell:

1. To take full advantage of GIMP's internal 32-bit floating point processing, choose 32-bit floating point precision and also choose the Linear light channel encoding.

- 2. If you are editing on a machine with limited RAM, or if you are editing very large images and layer stacks, consider using 16-bit floating point or integer precision.
- 3. If you want to take advantage of high bit depth image editing, but you don't want to deal with floating point channel values, then use 16-bit integer precision.
- 4. When soft-proofing an image, switch to Non-linear channel encoding to avoid certain problems with soft-proofing a linear gamma image using Little CMS.
- 5. On a less powerful machine with a limited amount of RAM, consider using 8-bit integer precision, in which case also choose the Non-linear channel encoding (which is the default for 8-bit). At 8-bit precision, if you choose the Linear light channel encoding, your image will have horribly posterized shadows.

6.7.4. More information about the Precision options

1. Choosing the bit depth (8-bit vs 16-bit vs 32-bit):

- The bit depth of an image sets limits on how much precision is available when processing your image files. All things being equal, higher bit depths provide more precision.
- The bit depth of an image file partially determines how much RAM is required for processing. The higher the bit depth, the more RAM is required to store data during image processing. Other relevant factors include the size of the image layers and the number of layers in the layer stack.

2. Choosing between integer and floating point precision:

- Floating point precision is required for taking full advantage of high bit depth using GIMP's internal 32-bit floating point processing. Floating point precision allows for the generation and use of channel values that fall outside the <u>display-referred range</u> from 0.0 ("display black") to 1.0 ("display white"), thus making possible very useful editing possibilities such as unbounded ICC profile conversions and <u>High Dynamic Range scene-referred editing operations</u>.
- Unlike floating point precision, integer precision cannot store channel values outside the display range. So choosing an integer precision from the Encoding menu means that all floating point channel values produced during processing are clipped to fit within the equivalent floating point range between 0.0 and 1.0 inclusively:
 - 8-bit integer values are clipped to the range 0-255.
 - 16-bit integer values are clipped to the range 0-65535.
 - 32-bit integer values are clipped to the range 0-4294967295.
- At any given bit depth, all things being equal integer precision is more precise than floating point
 precision. So 16-bit integer precision is more precise than 16-bit floating point precision, and 32-bit
 integer precision is more precise than 32-bit floating point precision. However, in GIMP you don't get
 more precision by choosing 32-bit integer over 32-bit floating point: GIMP still does all internal processing
 using 32-bit floating point precision even if you choose 32-bit integer precision in the Encoding menu.
 Remember, the Precision menu choices only determine how the image information is held in RAM.
- At any given bit depth, integer and floating point precision use approximately the same amount of RAM
 for internal calculations during image processing, and also require about the same amount of disk space
 when saving an image file to disk.

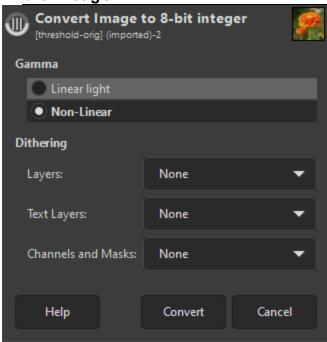
3. Choosing between Linear light and Non-linear channel encoding:

- At 8-bit precision, if you choose the Linear light channel encoding your image will have horribly posterized shadows. So don't use Linear light unless you also choose a higher bit depth.
- When soft-proofing, currently the gamut check will not return correct results if the image is at Linear light precision. So change to Non-linear before activating soft-proofing.
- Other than the fact that Linear light channel encoding is not suitable for 8-bit editing or for soft-proofing, from a user perspective the channel encoding you choose in the Precision menu won't have much effect on your workflow:
 - Currently if you choose "Linear light", then linear gamma channel values are displayed in the
 "pixel" values when using the Color Picker Tool, Sample Points, and Pointer dialogs. If you choose
 "Non-linear", then perceptually uniform channel values are displayed instead.
 - Currently the channel encoding that you choose makes a difference in the wrong colors that you might see if you check Section 6.9, "Use sRGB Profile" and your image isn't already in one of the GIMP built-in sRGB color spaces (but with either channel encoding choice, the colors are still wrong)
 - The only other way in which the channel encoding chosen in the Encoding menu might affect your workflow, has to do with the effects of using the "Gamma hack" found in the Advanced Color Options.

6.7.5. The Image Encoding Conversion Dialog

For most precision conversions this dialog will only ask how Gamma should be set. However, for conversion from 32-bit float precision to 8-bit integer, the below dialog will be shown that also asks for Dithering.

Figure 16.60. The "Precision" conversion dialog for 32-bit float to 8-bit integer



Gamma

The Gamma choices are explained in the Channel Encoding options.

Dithering

When reducing the precision from 32-bit floating point to 8-bit integer, you will lose some details. This can cause color banding, where there is an obvious jump from one color to another where there shouldn't be. Using dithering can be a way to reduce this. Dithering is a way of adding noise to an image to prevent banding and other unwanted patterns. The different dithering methods use different ways to add the noise.

There are three Dithering settings: for normal Layers, Text Layers, and Channels and Masks. For each you can set the type of dithering to use. The different dithering modes are explained in the <u>Dithering Method</u> option of the Dither filter.

In general, you probably won't use dithering for Text layers, since that will cause the text information to be lost, meaning it becomes a normal layer. I would first try conversion without any dithering, and if there are any noticeable artifacts, you can try using dithering on normal layers.







6.6. Indexed mode



6.8. "Color Management" Submenu

6.8. "Color Management" Submenu



6. The "Image" Menu



6.8. "Color Management" Submenu



Note

For color display related view settings, see <u>Section 5.13, "Color Management"</u>.

For GIMP's general Color Management preferences, see <u>Section 6.4</u>, "Color Management".

The Color Management submenu contains commands which let you change the ICC color profile associated with an image, save the associated ICC color profile to disk, set soft-proofing profile and options, and enable or disable black point compensation. The following commands are available in the Color Management submenu.

6.8.1. Activating the Color Management Submenu

You can access this command from the main menu through Image → Color Management.

6.8.2. The Contents of the "Color Management" Submenu

- Use sRGB Profile
- Assign Color Profile
- Convert to Color Profile
- <u>Discard Color Profile</u>
- Save Color Profile to File
- Soft-Proof Profile
- Soft-Proofing Rendering Intent
- Black Point Compensation











6.9. Use sRGB Profile

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6.9. Use sRGB Profile



6. The "Image" Menu



6.9. Use sRGB Profile

When checked, Use sRGB Profile assigns a GIMP built-in sRGB color space to your image. Also, if you've selected to display the image's assigned ICC color profile in the window title (which is the default) or status bar (see Image Title & Statusbar Format preferences), checking Use sRGB Profile will show "GIMP built-in sRGB" in the title or status bar in place of the image's assigned color profile.



Note

For images without color profile, or that have a sRGB profile Use sRGB Profile is disabled and checked by default. For images that have a different color profile this option will be enabled and unchecked. It's best to leave it that way unless you know what you are doing.

6.9.1. Activating the Command

You can access this command from the main menu through Image → Color Management → Use sRGB Profile.

6.9.2. Usage Notes for the Command

The best possible advice is to never check Use sRGB Profile when you are using a different color profile.

6.9.3. What does GIMP do when Use sRGB Profile is checked?

When you check the option to Use sRGB Profile, GIMP does two things:

- 1. Whatever ICC profile is currently assigned to the image, is stored (pending subsequent editing, Encoding, and Color Management actions), but isn't used. And then a built-in GIMP sRGB profile is assigned in place of the previously assigned ICC profile:
 - If the image is in Non-linear encoding, the ICC profile "GIMP built-in sRGB" is assigned.
 - If the image is in Linear light encoding, the ICC profile "GIMP built-in Linear sRGB" is assigned.

You can confirm that one of GIMP's built-in sRGB color spaces has been assigned by selecting Image \rightarrow Image Properties and checking the Color Profile.

6.9.4. When Use sRGB Profile is checked, what happens to the image and the image appearance?



Note

Assigning a new profile to an image doesn't change the image's actual channel values. Assigning a new ICC profile only changes the meaning of these values, which means the image appearance will change (unless the original and new profile are functionally equivalent).

When Use sRGB Profile is checked, one of GIMP's built-in sRGB profiles is assigned to the image. Assigning a new ICC profile to an image doesn't change the image's channel values, but it does more or less drastically change the image's appearance:

- 1. If the image was already in one of GIMP's built-in color spaces (or if the assigned ICC profile is a profile that is functionally equivalent to the assigned GIMP built-in sRGB profile) then the image's appearance will not change.
- If the image was not already in one of GIMP's built-in color spaces (and is not in a color space that is
 functionally equivalent to the assigned GIMP built-in sRGB profile), the image's appearance will change more or
 less drastically depending on three things:

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• What GIMP <u>channel encoding</u> — Linear light or Non-linear — the image was in before the Use sRGB Profile box was checked.

- How far the image's originally assigned ICC profile's channel encoding ("TRC") is from the GIMP channel encoding.
- How far the image's originally assigned ICC profile's Red, Green, and Blue chromaticities are from GIMP's built-in sRGB chromaticities.

6.9.5. A screenshot showing an example of incorrect image appearance after checking Use sRGB Profile

The image is color managed: An ICC profile is assigned to the image, and that profile is being used to send the image colors to the screen. After checking Use sRGB Profile, one of GIMP's built-in sRGB profiles has been incorrectly assigned to the image, so the colors look wrong.

In the screenshot below, the channel encoding of the original profile matches the GIMP channel encoding (both are linear), but the "LargeRGB-elle-V4-g10.icc" profile chromaticities don't match the GIMP built-in sRGB chromaticities. So after checking Use sRGB Profile, the tonality is correct but the colors are wrong. The image is still color managed, but it's color managed using the wrong ICC profile:

Figure 16.61. A screenshot illustrating the effect of checking use sRGB.



Image using LargeRGB-elle-V4-g10.icc profile.



Same image after checking Use sRGB Profile.



Caution

If your image's originally assigned ICC profile doesn't have the same channel encoding and chromaticities as the GIMP built-in sRGB profile, and you check and then immediately change your mind and uncheck

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Use sRGB Profile, the originally assigned ICC profile will be reassigned to your image and your image channel values will be unchanged. Otherwise, whether or not you can recover the originally assigned ICC profile and correct colors for your image depends on what else you've done between the checking and unchecking of Use sRGB Profile. Again, the best possible advice is to **never check Use sRGB Profile**.



♠



6.8. "Color Management" Submenu



6.10. Assign Color Profile

6.10. Assign Color Profile



6. The "Image" Menu



6.10. Assign Color Profile

Assign Color Profile allows you to assign a new ICC profile to an image.

6.10.1. Activating the Command

You can access this command from the main menu through Image \rightarrow Color Management \rightarrow Assign Color Profile.

6.10.2. Usage Notes for the Command

When importing an image from disk, sometimes you might want to assign a new ICC profile to the image:

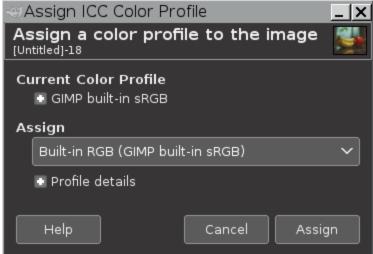
- 1. The image might not have an embedded ICC profile, in which case GIMP will automatically assign one of GIMP's built-in sRGB profiles:
 - If the image really is an sRGB image, then no further action is required.
 - If the image is not an sRGB image, then use Assign Color Profile to assign the correct ICC profile from disk.
- 2. The image might have an embedded ICC profile, but maybe it's not the right profile for the image, or maybe it's just not the profile you want assigned to the image. Use Assign Color Profile to assign another profile from disk.
- The image might have an embedded sRGB profile, but you want to assign a GIMP built-in sRGB profile in place
 of the embedded sRGB profile. Or conversely, maybe the image is in GIMP's built-in sRGB color space, but you
 want to assign an sRGB profile from disk.

6.10.3. An example with screenshots showing how to use Assign Color Profile

Let's say you just imported an image file that you know should be in the AdobeRGB1998 color space. But for any number of possible reasons the image doesn't have an embedded ICC profile.

In cases where the image doesn't have an embedded ICC profile, GIMP will automatically assign a built-in sRGB profile. So your AdobeRGB1998 image won't show correct colors until you assign an AdobeRGB1998-compatible ICC profile from disk. The screenshots below show the procedure:

Accessing Image → Color Management → Assign Color Profile... brings up the Assign ICC Color Profile dialog shown below:

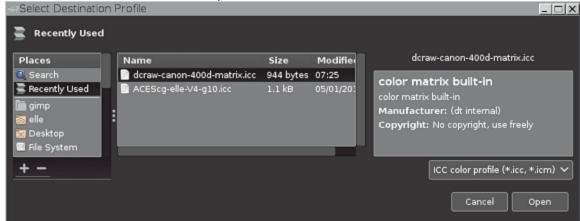


2. Under Current Color Profile is a description of the currently assigned color profile, in this case GIMP's built-in sRGB profile. Clicking on the icon next to the description of the currently assigned profile displays the

contents of various information tags in the assigned ICC profile.

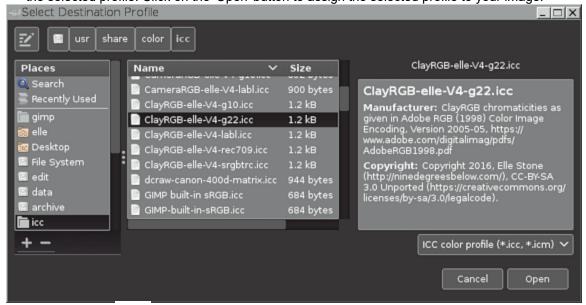
Clicking on the icon next to Profile details displays the contents of various information tags in the ICC profile that you pick to be assigned to the image. Until you've actually picked a new profile, the profile in the Assign box defaults to a GIMP built-in sRGB profile.

- 3. Between Assign and Profile details is a drop-down box that allows you to pick a new profile. Clicking in the drop-down box brings up a list of recently used profiles (if any). If the profile which you want to use is not listed, click Select color profile from disk... at the bottom of the drop-down list.
- 4. Clicking on Select color profile from disk... brings up the Select Destination Profile dialog for navigating to the disk location of the profile that you want to select from disk. The box has three panels:
 - a. The panel on the left allows you to navigate your on-disk folder structure to the folder of your choice.
 - b. The center panel initially shows another list of recently used profiles.
 - c. If you click on one of the recently used profiles, the right panel will show informational tags that are embedded in the selected profile.



If the profile you want to select is shown in the list of recently used profiles, the profile can be directly selected from the list of recently used profiles by clicking on the Open button. However, as the desired profile isn't in the list of recently used profile, the next step is to navigate to the profile's location on disk.

5. As shown in the screenshot below, the left and center panels of the Select Destination Profile dialog allow you to navigate to where your ICC profiles are stored on disk, and then pick an appropriate ICC color profile (in this example, an AdobeRGB1998-compatible profile), and the right panel displays informational tags embedded in the selected profile. Click on the Open button to assign the selected profile to your image.



6. Clicking on the Open button returns you to the Assign ICC Color Profile dialog, allowing you a chance to either assign the selected profile or else pick a new profile. Once you are sure you've picked the right profile, click on the Assign button (lower right corner), and the selected profile will be assigned to the image:



7. And now the image has been assigned an AdobeRGB1998-compatible ICC profile, and the colors are correctly displayed:

Figure 16.62. Color comparison example after assigning a profile



Upon importing this AdobeRGB1998 image, there was no embedded profile. So a GIMP built-in sRGB profile was automatically assigned.



After assigning an AdobeRGB1998-compatible profile from disk, the colors are brighter and more saturated.



6.9. Use sRGB Profile







6.11. Convert to Color Profile

6.11. Convert to Color Profile



6. The "Image" Menu



6.11. Convert to Color Profile

The Convert to Color Profile allows you to convert an image from its currently assigned ICC profile to another ICC profile.

6.11.1. Activating the Command

You can access this command from the main menu through Image \rightarrow Color Management \rightarrow Convert to Color Profile....

6.11.2. Usage Notes for the Command

In an ICC profile color managed editing application such as GIMP, every image has an assigned ICC color profile that (among other things) tells the Color Management System (in GIMP's case <u>Little CMS</u>) what color space to use when sending the image to the screen.

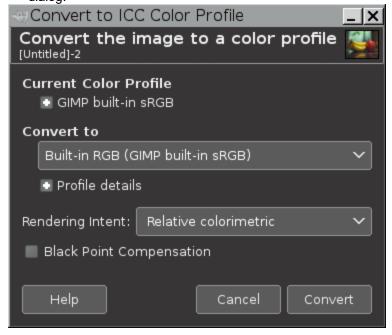
Sometimes it's convenient or necessary to convert an image from its currently assigned ICC color profile to another ICC color profile. For example:

- 1. Perhaps you want to convert the image from some other color space to GIMP's built-in sRGB color space.
- 2. Perhaps you want to convert the image to a printer profile before sending it out to a printing establishment.
- 3. Perhaps the currently assigned color space is not the right color space for the editing task at hand.

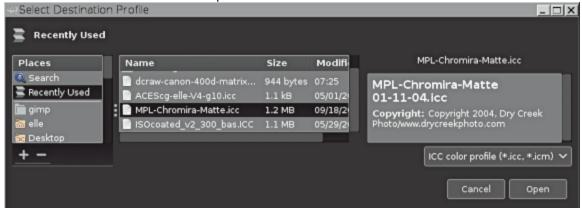
6.11.3. An example with screenshots showing how to use Convert to Color Profile

Let's say you have just finished editing an image. You edited the image in GIMP's built-in sRGB color space and now you want to convert a flattened copy of the image to a printer profile before sending it off to be printed. The screenshots below show the procedure:

1. Select Image → Color Management → Convert to Color Profile... to bring up the Convert to ICC Color Profile dialog:



- 2. Under Current Color Profile is a description of the currently assigned color profile, in this case GIMP's built-in sRGB profile. Clicking on the icon next to the description of the currently assigned profile displays the contents of various information tags in the assigned ICC profile.
 - Clicking on the icon next to Profile details displays the contents of various information tags in the ICC profile that you pick as the profile to which the image will be converted. Until you've actually picked a new profile, the profile in the Convert to box defaults to a GIMP built-in sRGB profile.
- 3. Between Convert to and Profile details is a drop-down box that allows you to pick a new profile. Clicking in the drop-down box brings up a list of recently used profiles (if any). If the profile which you want to use is not listed, click Select color profile from disk... at the bottom of the drop-down list.
- 4. Clicking on Select color profile from disk... brings up the Select Destination Profile dialog for navigating to the disk location of the profile that you want to select from disk. The box has three panels:
 - a. The panel on the left allows you to navigate your on-disk folder structure to the folder of your choice.
 - b. The center panel initially shows another list of recently used profiles.
 - c. If you click on one of the recently used profiles, the right panel will show informational tags that are embedded in the selected profile.



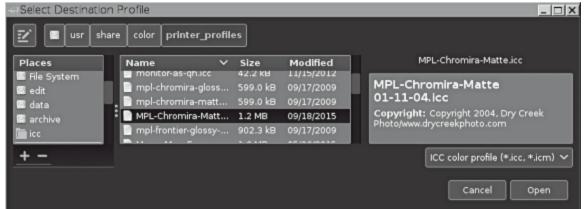
As the desired profile is shown in the list of recently used profiles, the profile can be directly selected from the list of recently used profiles by clicking on the Open button. Or as shown in the next screenshot, it can be selected by navigating to the profile's location on disk.



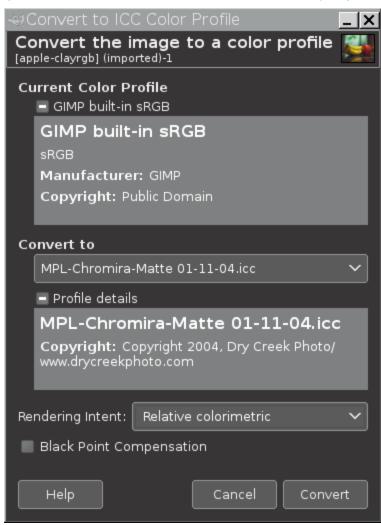
Note

"Destination profile" is the technical term for the profile to which you want to convert your image. Similarly, "source profile" refers to the current ICC color space (the color space the image is already in, before you convert it to the destination profile).

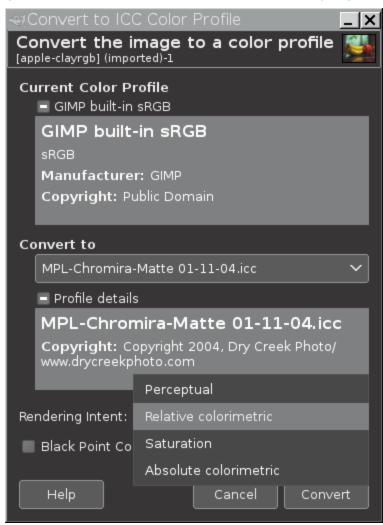
5. As shown in the screenshot below, the left and center panels of the Select Destination Profile dialog allow you to navigate to where your ICC profiles are stored on disk, and then pick the desired destination ICC color profile, and the right panel displays informational tags embedded in the selected profile. Click on the Open button to select the "Destination Profile".



6. Clicking on the Open button returns you to the Convert to ICC Color Profile dialog, allowing you a chance to either convert to the selected profile or else pick a new profile:



7. Once you are sure you've picked the right profile, the next step is to select the desired conversion options:



Selecting the desired conversion options requires two decisions:

- a. Choose a rendering intent from the Rendering Intent drop-down box. The ICC profile rendering intents are:
 - Perceptual
 - Relative colorimetric
 - Saturation
 - Absolute colorimetric
- b. Decide whether to use black point compensation:
 - To use black point compensation, the Black Point Compensation box should be checked.
 - To not use black point compensation, the Black Point Compensation box should be unchecked.
- 8. When you've picked the desired conversion options, click on the Convert button, and the image will be converted to the selected destination profile, in the current example, an RGB printer profile:

Figure 16.63. Color comparison example after assigning a profile



Before converting to printer profile.



After converting to printer profile.



6.10. Assign Color Profile

Report a bug in GIMP Report a documentation error







6.12. Discard Color Profile

6.12. Discard Color Profile



6. The "Image" Menu



6.12. Discard Color Profile

Discard Color Profile discards the image's currently assigned ICC profile, and instead assigns GIMP's built-in sRGB profile.



Note

Assigning a new profile to an image doesn't change the image's actual channel values. Assigning a new ICC profile only changes the meaning of the channel values, which means the image appearance will change (unless the original and new profile are functionally equivalent).

6.12.1. Activating the Command

You can access this command from the main menu through Image → Color Management → Discard Color Profile....

6.12.2. Usage Notes for the Command

If you discard the image's color profile:

- 1. The image's *appearance* will change (unless the image is already in an ICC profile color space that has the same colorants and channel encoding as the newly-assigned GIMP sRGB color space).
- 2. The image's *channel values* are not changed by discarding the currently assigned profile and instead assigning GIMP's built-in sRGB profile.

Discarding the image's currently assigned profile is useful if you wish to export an image to disk without an embedded ICC profile.

Discard Color Profile can only be used if the ICC color profile assigned to the image is not a GIMP built-in sRGB profile. GIMP's built-in sRGB profiles are not embedded in images that are exported to disk.









6.13. Save Color Profile to File



6. The "Image" Menu



6.13. Save Color Profile to File

Save Color Profile to File allows you to save to disk a copy of the ICC profile that's assigned to your image.

6.13.1. Activating the Command

You can access this command from the main menu through Image \rightarrow Color Management \rightarrow Save Color Profile to File....

6.13.2. Usage Notes for the Command

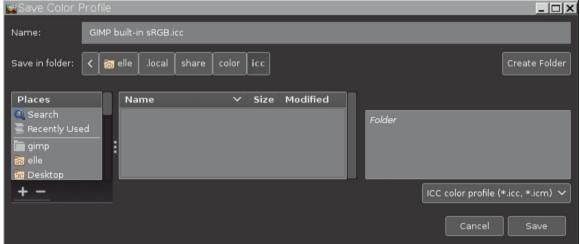
Save Color Profile to File is useful whenever you want an on-disk copy of whatever ICC profile is assigned your image. Save Color Profile to File can even be used to make an on-disk copy of GIMP's built-in sRGB profile.

6.13.3. An example with screenshots showing how to use Save Color Profile to File

Let's say you want to save a copy of the GIMP built-in sRGB profile to disk.

1. Open an image that has a GIMP built-in sRGB profile assigned.





The "Save Color Profile" dialog is divided into three panels. Use the left and center panel to navigate to where you want to save the profile.

When you save a copy of the profile to disk, it's perfectly OK to change the suggested file name (some programs, and especially command line utilities, don't work as easily with file names that include spaces). If you change the file name, it's a good idea to use either ".icc" or ".icm" as the file extension (some programs won't recognize an ICC profile that uses some other file extension).

When you've chosen a location and typed in a file name, click on the Save button to save a copy of the profile to disk.

3. You can even also overwrite an existing ICC profile. After selecting an existing profile file, the right panel will show informational tags that are embedded in the selected profile.







6.12. Discard Color Profile

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6.14. Soft-Proof Profile

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6.14. Soft-Proof Profile



6. The "Image" Menu



6.14. Soft-Proof Profile

Soft-Proof Profile allows you to set a soft-proof profile for your image. Usually this will be a profile of a specific printer that will be used to print your image.

To get an idea how your image will look with the soft-proof profile enable View \rightarrow Color Management \rightarrow Proof Colors.

6.14.1. Activating the Command

You can access this command from the main menu through Image \rightarrow Color Management \rightarrow Soft-Proof Profile....

6.14.2. Usage Notes for the Command

This command opens a dialog similar to that for <u>assigning a Color Profile</u>, where it shows the currently assigned soft-proof profile at the top, and lets you choose a new one below it.

By default None is selected as replacement. Clicking the drop-down will reveal a list of previously used color profiles that you can choose from, or you can Select color profile from disk..., that will open a dialog to browse for a profile located on your computer.









6.15. Soft-Proofing Rendering Intent

6.15. Soft-Proofing Rendering Intent



6. The "Image" Menu



6.15. Soft-Proofing Rendering Intent

The Soft-Proofing Rendering Intent lets you choose the rendering intent for the soft-proof profile. For more details about the available choices, see Rendering Intent.

Relative colorimetric is usually the best choice (default). Unless you use a LUT monitor profile (most monitor profiles are matrix), choosing perceptual intent actually gives you relative colorimetric.

To get an idea how your image will look with the soft-proof profile enable View \rightarrow Color Management \rightarrow Proof Colors.

6.15.1. Activating the Submenu

You can access this submenu from the main menu through Image \rightarrow Color Management \rightarrow Soft-Proofing Rendering Intent; then choose the option you prefer.







6.14. Soft-Proof Profile



6.16. Black Point Compensation

6.16. Black Point Compensation



6. The "Image" Menu



6.16. Black Point Compensation

When enabled, Black Point Compensation will be used for the soft-proof profile when displayed.

Black Point Compensation is used to compensate for differences in black levels available on different devices. When enabled, it makes adjustments based on the differences between the color profile of the image and that of the output device, as represented by the soft-proof profile.

To get an idea how your image will look with the soft-proof profile enable View \rightarrow Color Management \rightarrow Proof Colors.

6.16.1. Activating the Command

You can access this command from the main menu through Image \rightarrow Color Management \rightarrow Black Point Compensation.







6.15. Soft-Proofing Rendering Intent



6.17. "Transform" Submenu

6.17. "Transform" Submenu



6. The "Image" Menu



6.17. "Transform" Submenu

The items on the Transform submenu transform the image by flipping it or rotating it.

6.17.1. Activating the Submenu

You can access this submenu from the main menu through Image \rightarrow Transform.

6.17.2. The Contents of the "Transform" Submenu

The Transform submenu has the following commands:

- Flip Horizontally; Flip Vertically
- Rotate 90° clockwise / counter-clockwise; Rotate 180°; Arbitrary Rotation







6.16. Black Point Compensation



6.18. Flip Horizontally; Flip Vertically

6.18. Flip Horizontally; Flip Vertically



6. The "Image" Menu



6.18. Flip Horizontally; Flip Vertically

You can flip the image, or turn it over like a card, by using the Flip Horizontally or Flip Vertically commands. These commands work on the whole image. To flip a selection, use the <u>Flip Tool</u>. To flip a layer, use the functions of the Layer \rightarrow Transform menu or the Flip Tool.

6.18.1. Activating the Commands

- You can access the horizontal flip command from the main menu through Image → Transform → Flip Horizontally.
- You can access the vertical flip command from the main menu through Image → Transform → Flip Vertically.







6.17. "Transform" Submenu



6.19. Rotation

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6.19. Rotation



6. The "Image" Menu



6.19. Rotation

You can rotate the image using the rotation commands on the Transform submenu of the Image menu. These commands work on the whole image.

Rotating by 90° clockwise or counter-clockwise can be used to change between Portrait and Landscape orientation. Rotating by 180° can be used to turn the image upside down. These three common angles are available as commands in the submenu.

Use arbitrary rotation to rotate the image at any angle. This command behaves like the Rotate Tool.



Note

To instead rotate a selection or a layer, use the <u>Rotate Tool</u>. You can also rotate a layer by using the <u>Layer Transform</u> menu.

6.19.1. Activating the Commands

You can access these commands from the main menu through

- Image → Transform → Rotate 90 degrees CW,
- Image → Transform → Rotate 90 degrees CCW,
- Image → Transform → Rotate 180°,
- Image → Transform → Arbitrary Rotation....







6.18. Flip Horizontally; Flip Vertically



6.20. Canvas Size

6.20. Canvas Size



6. The "Image" Menu



6.20. Canvas Size

The "canvas" is the visible area of the image. By default the size of the canvas coincides with the size of the layers. The Canvas Size... command opens the "Set Image Canvas Size" dialog that lets you enlarge or reduce the canvas size. You can, if you want, modify the size of the layers. When you enlarge the canvas, you create free space around the contents of the image. When you reduce it, the visible area is cropped, however the layers still extend beyond the canvas border.

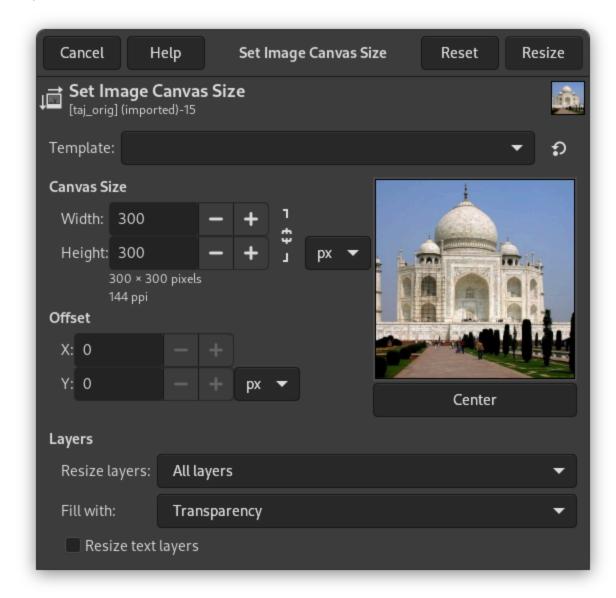
When you reduce the canvas size, the new canvas appears surrounded with a thin negative border in the preview. The mouse pointer is a moving cross: click and drag to move the image against this frame.

6.20.1. Activating the Command

You can access this command from the main menu through Image → Canvas Size....

6.20.2. Description of the "Set Image Canvas Size" dialog

Figure 16.64. The "Set Image Canvas Size" dialog



Canvas Size

Width, Height

You can set the Width and the Height of the canvas. The default units are pixels but you can choose different units, e.g. percent, if you want to set the new dimensions relative to the current dimensions. If the Chain to the right of the Width and Height is not broken, both Width and Height keep the same relative size to each other. That is, if you change one of the values, the other one also changes a corresponding amount. If you break the Chain by clicking on it, you can set Width and Height separately.

Whatever units you use, information about the size in pixels and the current resolution are always displayed below the *Width* and *Height* fields. You cannot change the resolution in the Canvas Size dialog; if you want to do that, use the Print Size dialog.

Offset

The Offset values are used to place the image (the image, not the active layer) on the canvas. You can see the size and the content of the canvas in the preview of the dialog window. When the canvas is smaller than the image, the preview window shows it in a frame with a thin negative border.

X, Y

The X and Y specify the coordinates of the upper left corner of the image relative to the upper left corner of the canvas. They are negative when the canvas is smaller than the image. You can place the image in different ways (of course, the coordinates can't exceed the canvas borders):

- by click-and-dragging the image,
- by entering values in the X and Y text boxes,
- by clicking on the small arrow-heads. This increments the value by one pixel (unit).
- And when the focus is on a text box, you can use the keyboard arrow keys, **Up** and **Down** to change by one pixel (unit), or **PageUp** and **PageDown** to change the value by 10 pixels (units).

Layers

- Resize layers: this drop-down list offers you several possibilities:
 - None: default option. No layer is resized, only the canvas is.
 - All Layers: all layers are resized to canvas size.
 - Image-sized layers: only layers with the same size as the image are sized to canvas size.
 - All visible layers: only visible layers, marked with a icon, in the Layers dialog, are sized to canvas size.
- Fill with: you can fill resized layers with Foreground color, Background color, Middle Gray (CIELAB), White, Transparency (default), Pattern.
- Resize text layers: Resizing text layers will make them uneditable.

Center

The Center button allows you to center the image on the canvas. When you click on the Center button, the offset values are automatically calculated and displayed in the text boxes.

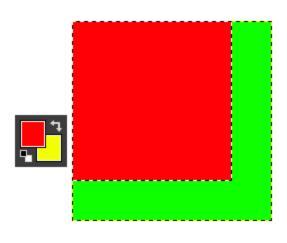


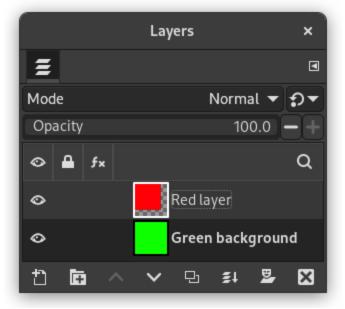
Note

When you click on the Resize button, the canvas is resized, but the pixel information and the drawing scale of the image are unchanged. If the layers of the image did not extend beyond the borders of the canvas before you changed its size, there are no layers on the part of the canvas that was added by resizing it. Therefore, this part of the canvas is transparent and displayed with a checkered pattern, and it is not immediately available for painting. You can either flatten the image, in which case you will get an image with a single layer that fits the canvas exactly, or you can use the Layers to Image Size command to resize only the active layer, without changing any other layers. You can also create a new layer and fill it with the background you want. By doing this, you create a digital "passe-partout" (a kind of glass mount with a removable back for slipping in a photograph).

6.20.3. Example

Figure 16.65. Original image

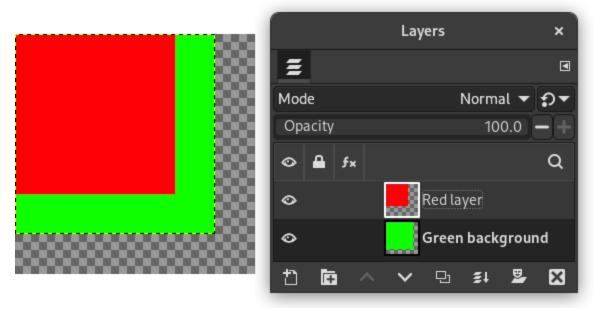




We started with a green background layer 100×100 pixels, which defines a default canvas with the same size. Then we added a new red layer 80×80 pixels. The active layer limits are marked with a black and yellow dotted line. The red

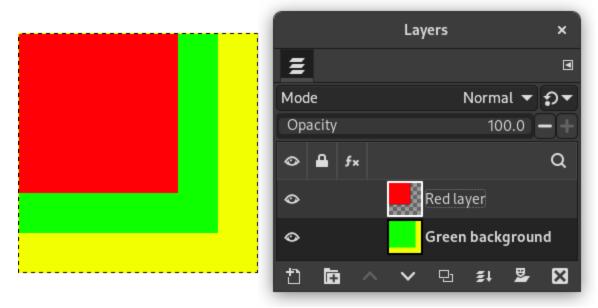
layer does not fill the canvas completely: the unoccupied part is transparent. The background color in the Toolbox is yellow.

Figure 16.66. Canvas enlarged (layers unchanged)



The canvas has been enlarged to 120×120 pixels. The layers size remained unchanged. The unoccupied part of the canvas is transparent.

Figure 16.67. Canvas enlarged (all layers changed)



The canvas has been enlarged to 120×120 pixels. All layers have been enlarged to the canvas size. The undrawn part is transparent in the red layer and yellow (background color in Toolbox) in the green background layer.

6.20.4. What's Canvas Size useful for?

You may want to add some stuff around your image: enlarge canvas size, add a new layer that will have the same size as the new canvas and then paint this new layer. That's the converse of cropping. You can also use this command to crop an image:

Figure 16.68. Resizing canvas



Click on the chain next to Width and Height entries to unlink dimensions. By modifying these dimensions and moving image against canvas, by trial and error, you can crop the part of the image you want. Click on the Center button and then on the Resize button.

Figure 16.69. Cropped image





Note

The Crop tool is easier to use.



6.19. Rotation







6.21. Fit Canvas to Layers

6.21. Fit Canvas to Layers



6. The "Image" Menu



6.21. Fit Canvas to Layers

The Fit Canvas to Layers command adapts the canvas size to the size of the largest layer in the image, in both width and height.

When you create or open an image, the canvas size is defined as the image size and remains unchanged if you add new layers. If you add a layer larger than the canvas, only the area limited by the canvas will be visible. To show the whole layer, use this command.

6.21.1. Activating the Command

You can access this command from the main menu through Image → Fit Canvas to Layers.







6.20. Canvas Size



6.22. Fit Canvas to Selection

6.22. Fit Canvas to Selection



6. The "Image" Menu



6.22. Fit Canvas to Selection

The Fit Canvas to Selection command adapts the canvas size to the size of the selection, in both width and height.

6.22.1. Activating the Command

You can access this command from the main menu through Image → Fit Canvas to Selection.







6.21. Fit Canvas to Layers



6.23. Print Size

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6.23. Print Size



6. The "Image" Menu



6.23. Print Size

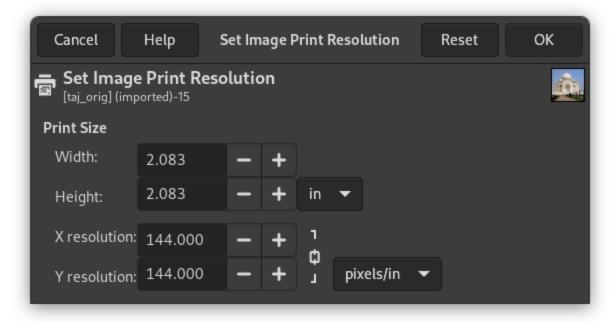
This command opens the "Set Image Print Resolution" dialog that allows you to change the *dimensions of a printed image* and its *resolution*. This command does not change the number of pixels in the image and it does not resample the image. (If you want to change the size of an image by resampling it, use the Scale Image command.)

6.23.1. Activating the Dialog

You can access this dialog from the main menu through Image → Print Size....

6.23.2. Options in the "Print Size" Dialog

Figure 16.70. The "Set Image Print Resolution" dialog



The output resolution determines the number of pixels used per unit length for the printed image. Do not confuse the output resolution with the printer's resolution, which is a printer feature and expressed in dpi (dots per inch); several dots are used to print a pixel.

When the dialog is displayed, the resolution shown in the boxes is the resolution of the original image. If you increase the output resolution, the printed page will be smaller, since more pixels are used per unit of length. Conversely, and for the same reason, resizing the image modifies the resolution.

Increasing the resolution results in increasing the sharpness of the printed page. This is quite different from simply reducing the image size by scaling it, since no pixels (and no image information) are removed.

Width, Height

You can set the printing Width and Height by using the text boxes. You can also choose the units for these values from the drop-down list.

As soon as you change the Width or the Height, the X and/or Y resolution values automatically change accordingly. If the two resolution values remain linked, the relationship of the width to the height of the image is also automatically maintained. If you would like to set these values independently of each other, click on the probability chain symbol to break the link.

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X resolution, Y resolution

You can set the resolution used to calculate the printed width and height from the physical size of the image, that is, the number of pixels in it.

Use the text boxes to change these resolution values. They can be linked to keep their relationship constant. The closed chain symbol between the two boxes indicates that the values are linked together. If you break the link by

clicking on the chain symbol, you will be able to set the values independently of each other.



Note

The default resolution unit used for the X and Y resolution may depend on the type of image you imported. PNG images that have a resolution set, are known to be imported with the unit set to metric, meaning you will see pixels/mm here in that case.

GIMP currently does not have a preference that overrides the unit set in the image. However, if you change it here (and press OK to exit the dialog), it will be remembered for the current session.



6.22. Fit Canvas to Selection







6.24. Scale Image

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6.24. Scale Image



6. The "Image" Menu



6.24. Scale Image

The Scale Image command enlarges or reduces the physical size of the image by changing the number of pixels it contains. It changes the size of the contents of the image and resizes the canvas accordingly.

It operates on the entire image. If your image has layers of different sizes, making the image smaller could shrink some of them down to nothing, since a layer cannot be less than one pixel wide or high. If this happens, you will be warned before the operation is performed.

If you only want to scale a particular layer, use the <u>Scale Layer</u> command.



Note

If scaling would produce an image larger than the "Maximum new image size" set in the <u>System Resources</u> page of the Preferences dialog (which has a default of 128 MiB), you are warned and asked to confirm the operation before it is performed. You may not experience any problems if you confirm the operation, but you should be aware that very large images consume a lot of resources and extremely large images may take more resources than you have, causing GIMP to crash or not perform well.

6.24.1. Activating the Command

You can access this command from the main menu through Image → Scale Image....

6.24.2. The "Scale Image" Dialog

Figure 16.71. The "Scale Image" dialog

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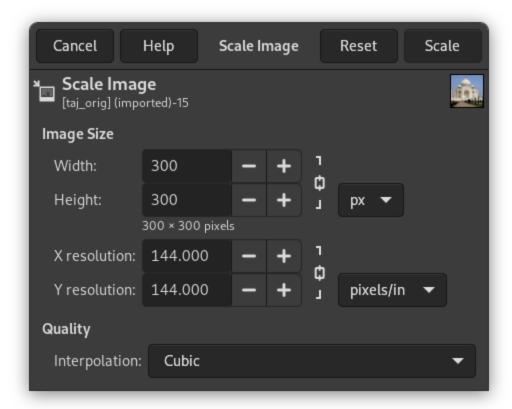


Image Size

You should keep in mind that an image can be located in one of four places: in the image file, in RAM after it has been loaded, on your screen when it is displayed, or on paper after it has been printed. Scaling the image changes the number of pixels (the amount of information) the image contains, so it directly affects the amount of memory the image needs (in RAM or in a file).

However printing size also depends upon the resolution of the image, which essentially determines how many pixels there will be on each inch of paper. If you want to change the printing size without scaling the image and changing the number of pixels in it, you should use the Print Size dialog. The screen size depends not only on the number of pixels, but also on the screen resolution, the zoom factor and the setting of the Dot for Dot option. If you enlarge an image beyond its original size, GIMP calculates the missing pixels by interpolation, but it does not add any new detail. The more you enlarge an image, the more blurred it becomes. The appearance of an enlarged image depends upon the interpolation method you choose. You may improve the appearance by using the Sharpen (Unsharp Mask)) filter after you have scaled an image, but it is best to use high resolution when you scan, take digital photographs or produce digital images by other means. Raster images inherently do not scale up well. You may need to reduce your image if you intend to use it on a web page. You have to consider that most internet users have relatively small screens which cannot completely display a large image, for example on mobile devices. Adding or removing pixels is called "Resampling".

Width, Height

When you click on the Scale command, the dialog displays the dimensions of the original image in pixels. You can set the Width and the Height you want to give to your image by adding or removing pixels. If the \Box chain icon next to the Width and Height boxes is unbroken, the Width and Height will stay in the same proportion to each other. If you break the chain by clicking on it, you can set them independently, but this will distort the image.

However, you do not have to set the dimensions in pixels. You can choose different units from the drop-down menu. If you choose percent as the units, you can set the image size relative to its original size. You can also use physical units, such as inches or millimeters. If you do that, you should set the X resolution and Y resolution fields to appropriate values, because they are used to convert between physical units and image dimensions in pixels.

X resolution, Y resolution

You can set the printing resolution for the image in the X resolution and Y resolution fields. You can also change the units of measurement by using the drop-down menu.

Quality

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To change the image size, either some pixels have to be removed or new pixels must be added. The process you use determines the quality of the result. The Interpolation drop-down list provides a selection of available methods of interpolating the color of pixels in a scaled image: Interpolation methods are described in Interpolation.



Note

See also the <u>Scale tool</u>, which lets you scale a layer, a selection or a path.







6.23. Print Size



6.25. Crop Image

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6.25. Crop Image



6. The "Image" Menu



6.25. Crop Image

You can crop image in two ways:

- Crop to selection
- Crop to content

6.25.1. Crop to selection

The Crop to Selection command crops the image to the boundary of the selection by removing any strips at the edges whose contents are all completely unselected. Areas which are partially selected (for example, by feathering) are not cropped. If the selection has been feathered, cropping is performed on the external limit of the feathered area. If there is no selection for the image, the menu entry is disabled.



Note

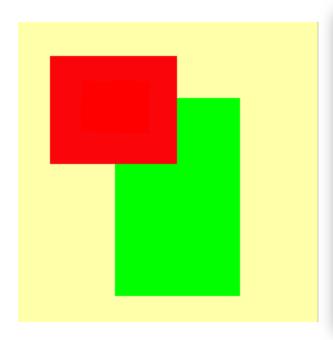
This command crops all of the image layers. To crop the active layer only, use the <u>Crop to selection</u> command from the Layer menu.

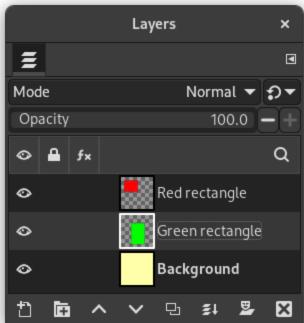
You can access this command from the menu through Image → Crop to Selection.

6.25.2. Crop to content

The Crop to content command removes the borders from an image. It searches the layers for the largest possible border area that is all the same color, and then crops this area from the image, as if you had used the Crop tool.

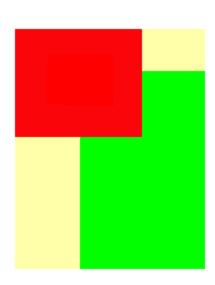
Figure 16.72. "Crop to content" example

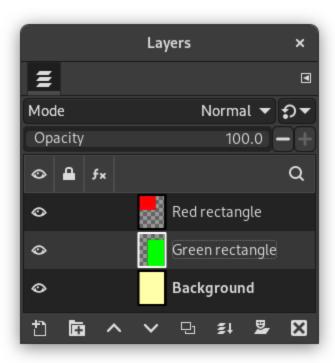




This image is made of three layers. One with a red rectangle, another with a green rectangle, and a yellow background. The green layer is active.

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"Crop to content" has cropped the image to the outer borders of the green and red layers. Only the part of the yellow layer inside the red-green area has been kept.

You can access this command from the menu through Image \rightarrow Crop to Content.



6.24. Scale Image



6.26. Slice Using Guides



6. The "Image" Menu



6.26. Slice Using Guides

The Slice Using Guides command slices up the current image, based on the image's guides. It cuts the image along each guide, similar to slicing documents in an office with a guillotine (paper cutter) and creates new images out of the pieces. For further information on guides, see <u>Section 1.2, "Guides"</u>.

6.26.1. Activating the Command

• You can access this command from the main menu through Image \rightarrow Slice Using Guides.







6.25. Crop Image



6.27. Zealous Crop

6.27. Zealous Crop



6. The "Image" Menu



6.27. Zealous Crop

The Zealous Crop command crops an image using a single solid color as a guide. It crops the edges, as with the <u>Autocrop</u> command, but it also crops the areas in the middle of the image which have the same color (at least, in principle).

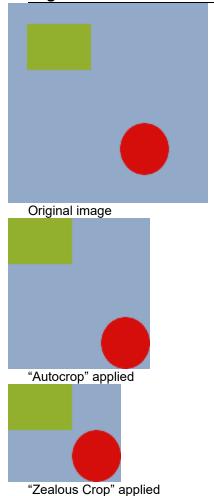


Caution

Please note that Zealous Crop crops all of the layers, although it only analyzes the active layer. This may lead to a loss of information from the other layers.

6.27.1. Example

Figure 16.73. "Zealous Crop" Example



6.27.2. Activating the Command

You can access this command from the main menu through Image → Zealous Crop.

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6.26. Slice Using Guides

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6.28. Merge Visible Layers



6. The "Image" Menu



6.28. Merge Visible Layers

The Merge Visible Layers command merges the layers which are visible into a single layer. Visible layers are those which are indicated on the Layers dialog with an "eye" icon.



Note

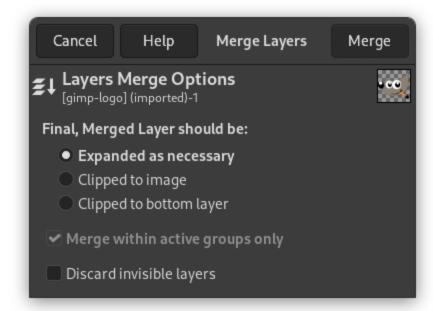
With this command, the original visible layers disappear. With the <u>New From Visible</u> command, a new layer is created at top of the stack and original visible layers persist.

6.28.1. Activating the Command

- You can access this command from the main menu through Image → Merge Visible Layers...,
- or by using the keyboard shortcut | Ctrl + M |.

6.28.2. Description of the "Layers Merge Options" Dialog

Figure 16.74. The "Layers Merge Options" Dialog



Final, Merged Layer should be:

Visible layers are the layers which are marked with an "eye" icon in the Layers dialog.

- Expanded as necessary: The final layer is large enough to contain all of the merged layers. Please note that a layer in GIMP can be larger than the image.
- *Clipped to image*: The final layer is the same size as the image. Remember that layers in GIMP can be larger than the image itself. Any layers in the image that are larger than the image are clipped by this option.
- Clipped to bottom layer: The final layer is the same size as the bottom layer. If the bottom layer is smaller than some of the visible layers, the final layer is clipped and trimmed to the size and position of the bottom layer.

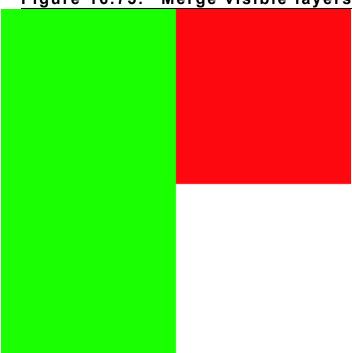
Merge within active groups only

This self-explanatory option is enabled when a <u>layer group</u> exists.

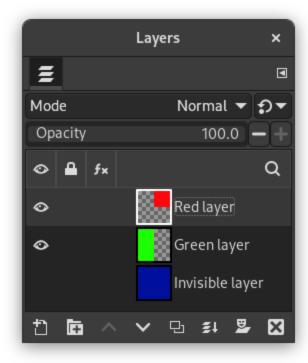
Discard invisible lavers

When this option is checked, non visible layers are removed from the layer stack.

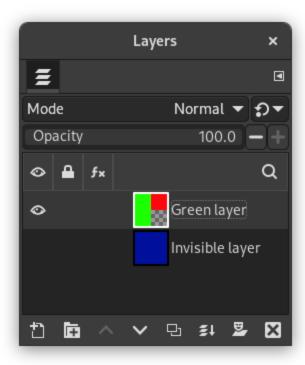




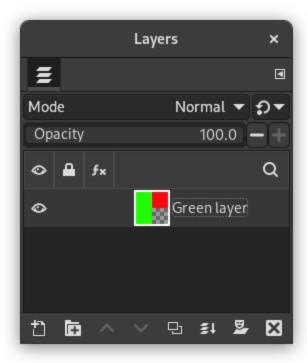
Example image



Before applying "Merge visible layers": Three layers; two layers are visible



After applying "Merge visible layers" with "Discard invisible layers" unchecked



After applying "Merge visible layers" with "Discard invisible layers" checked



6.27. Zealous Crop

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6.29. Flatten Image

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6.29. Flatten Image



6. The "Image" Menu



6.29. Flatten Image

The Flatten Image command merges all of the layers of the image into a single layer with no alpha channel. After the image is flattened, it has the same appearance it had before. The difference is that all of the image contents are in a single layer without transparency. If there are any areas which are transparent through all of the layers of the original image, the background color is visible.

This operation makes significant changes to the structure of the image. It is normally only necessary when you would like to save an image in a format which does not support levels or transparency (an alpha channel).

6.29.1. Activating the Command

You can access this command from the main menu through Image → Flatten Image.







6.28. Merge Visible Layers



6.30. Align Visible Layers..

6.30. Align Visible Layers...



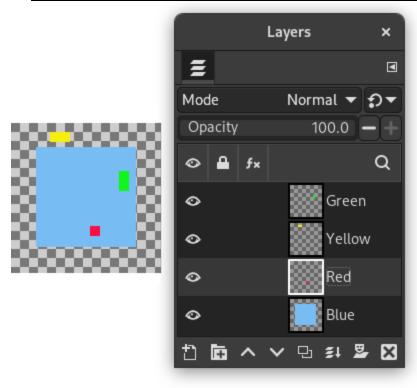
6. The "Image" Menu



6.30. Align Visible Layers...

With the Align Visible Layers command, you can very precisely position the visible layers (those marked with the "eye" icon). This degree of precision is especially useful when you are working on animations, which typically have many small layers. Clicking on Align Visible Layers displays a dialog which allows you to choose how the layers should be aligned.

Figure 16.76. Example image for layer alignment



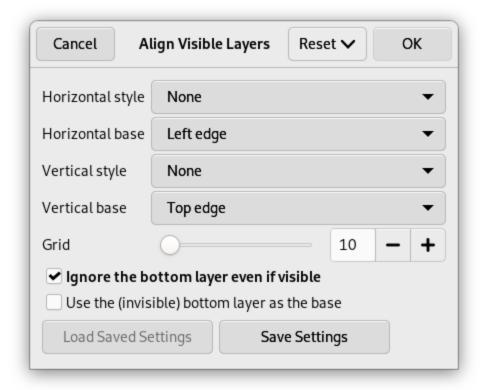
The example image contains four layers on a (150×150 pixel) canvas. The red square is 10×10 pixels, the green rectangle is 10×20 pixels and the yellow rectangle is 20×10 pixels. The background layer (blue, 100×100 pixels) will not be affected by the command, since the Ignore lower layer option has been checked on the dialog. Note the order of the layers in the Layers Dialog.

6.30.1. Activating the Command

• You can access this command from the main menu through Image → Align Visible Layers.... There is no default keyboard shortcut. If the image holds a single layer only, you get a message from GIMP telling that there must be more than one layer in the image to execute the command.

6.30.2. Description of the "Align Visible Layers" dialog

Figure 16.77. The "Align Visible Layers" dialog

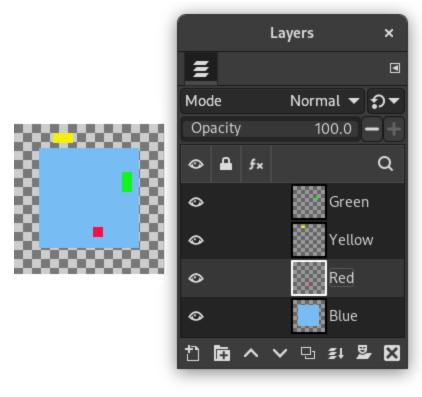


Horizontal style, Vertical style

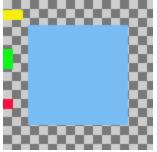
These options control how the layers should be moved in relationship to each other. You can choose:

- None: There will be no change in the horizontal or the vertical position, respectively.
- Collect: The visible layers will be aligned on the canvas, in the way that is determined by the Horizontal base and Vertical base options. If you select a Horizontal base of Right edge, layers may disappear from the canvas. You can recover them by enlarging the canvas. If you check the Use the (invisible) bottom layer as the base option, the layers will be aligned on the top left corner of the bottom layer.

Figure 16.78. Horizontal "Collect" alignment (on the edge of the canvas)

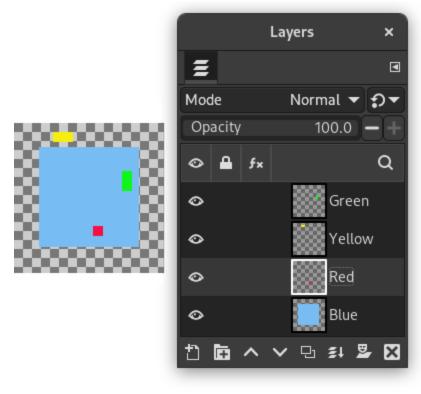


Original image with the layer stack

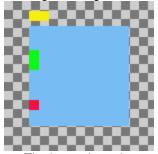


The layers have been moved horizontally so that their left edges are aligned with the left edge of the canvas.

Figure 16.79. Horizontal "Collect" alignment (on the bottom layer)



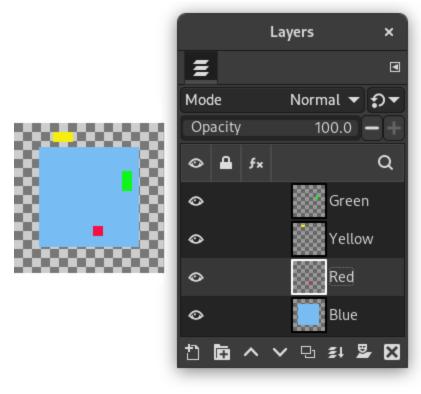
Original image with the layer stack



The layers have been moved horizontally so that their left edges align with the left edge of the bottom layer.

• Fill (left to right); Fill (top to bottom): The visible layers will be aligned with the canvas according to the edge you selected with Horizontal base or Vertical base, respectively. The layers are arranged regularly, so that they do not overlap each other. The top layer in the stack is placed on the leftmost (or uppermost) position in the image. The bottom layer in the stack is placed on the rightmost (or bottommost) position of the image. The other layers are placed regularly between these two positions. If the Use the (invisible) bottom layer as the base option is checked, the layers are aligned with the corresponding edge of the bottom layer.

Figure 16.80. Horizontal "Fill" alignment (canvas)

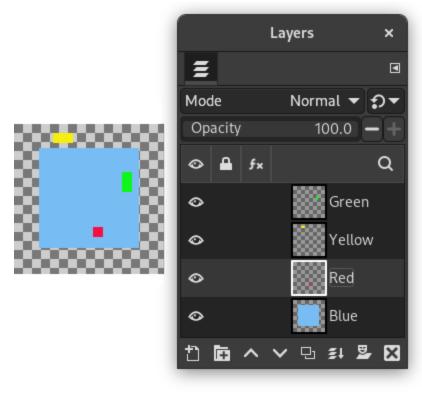


Original image with the layer stack

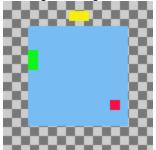


Horizontal filling alignment, Left to Right, with Use the (invisible) bottom layer as the base option not checked. The top layer in the stack, the green one, is placed all the way on the left. The bottom layer in the stack, the red one, is placed is on the right and the yellow layer is between the other two.

Figure 16.81. Horizontal "Fill" alignment (bottom layer)



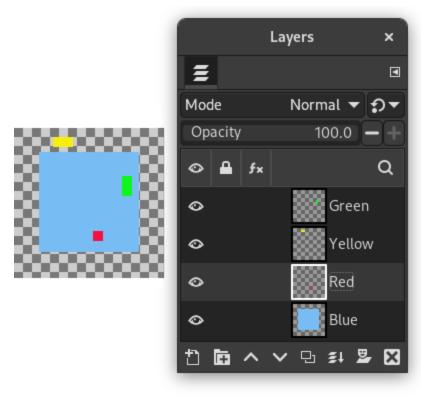
Original image with the layer stack



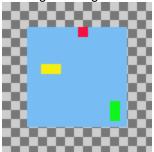
The same parameters as in the previous example, but with the lowest (blue) level as the base.

• Fill (right to left); Fill (bottom to top): These settings work similarly to the ones described above, but the filling occurs in the opposite direction.

Figure 16.82. Vertical "Fill" alignment (bottom layer)



Original image with the layer stack



Vertical "Fill" alignment, bottom to top, bottom layer as base

There must be at least three visible layers in the image to use the "Fill" options.

• Snap to grid: The visible layers will be aligned with the grid.



6.29. Flatten Image







6.31. "Guides" Submenu

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6.31. "Guides" Submenu



6. The "Image" Menu



6.31. "Guides" Submenu

The Guides submenu contains various commands for the creation and removal of guides.

6.31.1. Activating the Submenu

You can access this submenu from the main menu through Image \rightarrow Guides.

6.31.2. The Contents of the "Guides" Submenu

The Guides submenu contains the following commands:

- Section 6.32, "New Guide (by Percent)"
- Section 6.33, "New Guide"
- Section 6.34, "New Guides from Selection"
- Section 6.35, "Remove all Guides"







6.30. Align Visible Layers...



6.32. New Guide (by Percent)

6.32. New Guide (by Percent)



6. The "Image" Menu



6.32. New Guide (by Percent)

The New Guide (by Percent)... command adds a guide to the image. The position of the guide is specified as a percentage of the canvas Height and Width.



Tip

You can add guides to the image more quickly by simply clicking and dragging guides from the image rulers and positioning them where you would like. Guides you draw with click-and-drag are not as precisely positioned as those you draw with this command, however.

6.32.1. Activating the Command

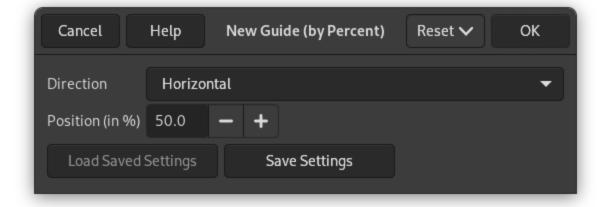
You can access this command from the main menu through Image → Guides → New Guide (by Percent).

6.32.2. "New Guide (by Percent)" Options

When you select this menu item, a dialog opens, which allows you to set the Direction and Position, by percent, of the new guide.

This option is interesting if you want to place guides exactly at the middle of the image, using 50%.

Figure 16.83. The "New Guide (by Percent)" Dialog



Direction

You can choose the Direction of the guide, either Horizontal or Vertical, by using the drop-down list.

Position

You can also choose the Position of the new guide. The coordinate origin is in the upper left corner of the canvas.



6.31. "Guides" Submenu





6.33. New Guide

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6.33. New Guide



6. The "Image" Menu



6.33. New Guide

The New Guide... command adds a guide to the image.



Tip

You can add guides to the image more quickly, but less accurately, by simply clicking and dragging guides from the image rulers and positioning them where you would like.

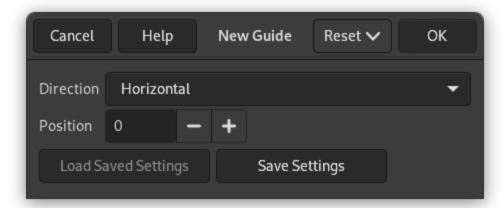
6.33.1. Activating the Command

You can access this command from the main menu through Image → Guides → New Guide

6.33.2. "New Guide" Options

When you select New Guide, a dialog opens, which allows you to set the Direction and Position, in pixels, of the new guide more precisely than by using click-and-drag.

Figure 16.84. The "New Guide" Dialog



Direction

You can choose the Direction of the guide, either Horizontal or Vertical, by using the drop-down list.

Position

The coordinate origin for the Position is the upper left corner of the canvas.











6.34. New Guides from Selection

6.34. New Guides from Selection



6. The "Image" Menu



6.34. New Guides from Selection

The New Guides from Selection command adds four guide lines, one for each of the upper, lower, left and right edges of the current selection. If there is no selection in the current image, no guides are drawn.

6.34.1. Activating the Command

You can access this command from the main menu through Image \rightarrow Guides \rightarrow New Guides from Selection.







6.33. New Guide



6.35. Remove all Guides

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6.35. Remove all Guides



6. The "Image" Menu



6.35. Remove all Guides

The Remove all Guides command removes all guides from the image. Clicking-and-dragging one or two guides onto a ruler is a quicker way to remove them. This command is useful if you have positioned several guides.

6.35.1. Activating the Command

You can access this command from the main menu through Image \rightarrow Guides \rightarrow Remove all guides.







6.34. New Guides from Selection



6.36. Configure Grid..

6.36. Configure Grid...



6. The "Image" Menu



6.36. Configure Grid...

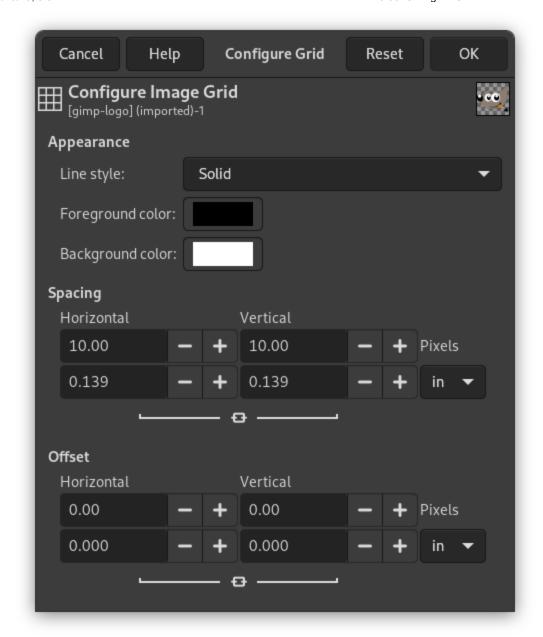
The Configure Grid command lets you set the properties of the grid which you can display over your image while you are working on it. GIMP provides only Cartesian grids. You can choose the color of the grid lines, and the spacing and offsets from the origin of the image, independently for the horizontal and vertical grid lines. You can choose one of five different grid styles.

6.36.1. Activating the Command

You can access this command from the main menu through Image → Configure Grid....

6.36.2. Description of the "Configure Image Grid" dialog

Figure 16.85. The "Configure Grid" dialog



Appearance

In the Configure Grid dialog, you can set the properties of the grid which is shown when you turn on the image grid.

Line style

Intersections (dots)

This style, the least conspicuous, shows a simple dot at each intersection of the grid lines.

Intersections (crosshairs)

This style, the default, shows a plus-shaped crosshair at each intersection of the grid lines.

Dashed

This style shows dashed lines in the foreground color of the grid. If the lines are too close together, the grid won't look good.

Double dashed

This style shows dashed lines, where the foreground and background colors of the grid alternate.

Solid

This style shows solid grid lines in the foreground color of the grid.

Foreground and Background colors

Click on the color button to select a new color for the grid.

Spacing

Horizontal, Vertical

You can select the cell size of the grid and the unit of measurement.

Offset

Horizontal, Vertical

You can set the offset of the first cell. The coordinate origin is the upper left corner of the image. By default, the grid begins at the coordinate origin, (0,0).







6.35. Remove all Guides



6.37. Image Properties

6.37. Image Properties



6. The "Image" Menu



6.37. Image Properties

The "Image Properties" command opens a window that shows lots of different information for the image.

6.37.1. Activating the Command

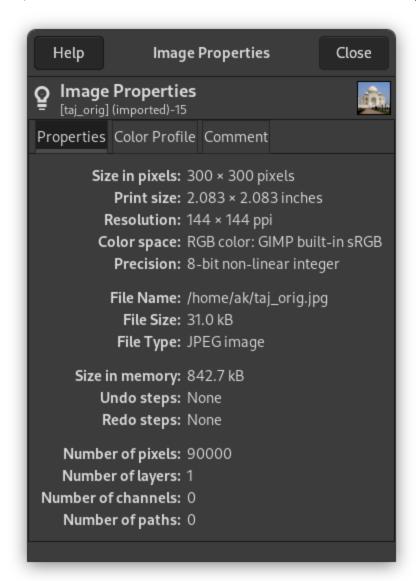
- You can access this command from the main menu through Image → Image Properties,
- or by using the keyboard shortcut | Alt |+ | Return |

6.37.2. Options

The properties window is divided into three tabs.

6.37.2.1. "Properties" tab

Figure 16.86. "Properties" tab



Size in pixels

Shows the image height and width in pixels, that is, the *physical* size of the image.

Print size

Shows the size the image will have when it is printed, in the current units. This is the *logical* size of the image. It depends upon the physical size of the image and the screen resolution.

Resolution

Shows the print resolution of the image.



Note

The default resolution unit used may depend on the type of image you imported. PNG images that have a resolution set, are known to be imported with the unit set to metric, meaning you will see pixels/mm here in that case.

See also Section 6.23, "Print Size".

Color space

Shows the image's color space.

Precision

Shows the precision of the image's encoding. See also <u>Section 6.7, ""Encoding" Submenu"</u>.

File name

Path and name of the file that contains the image.

File size

Size of the file that contains the image.

File type

Format of the file that contains the image.

Size in memory

RAM consumption of the loaded image including the images journal. This information is also displayed in the image window. The size is quite different from the size of the file on disk. That is because the displayed image is decompressed and because GIMP keeps a copy of the image in memory for Redo operations.

Undo steps

Number of actions you have performed on the image, that you can undo. You can see them in the <u>Undo History</u> dialog.

Redo steps

Number of actions you have undone, that you can redo.

Number of pixels, Number of layers, Number of channels, Number of paths Well counted!

6.37.2.2. "Color profile" tab

This tab contains the name of the color profile the image is loaded into GIMP with. Default is the built-in "sRGB" profile.

6.37.2.3. "Comments" tab

This tab allows you to view and edit a comment for the image.







6.36. Configure Grid...



6.38. "Metadata" Submenu

6.38. "Metadata" Submenu



6. The "Image" Menu



6.38. "Metadata" Submenu

Metadata are information about a document, embedded in the document. For GIMP, they are image metadata.



Note

PNG, JPEG, TIFF and WebP preserve existing metadata. You can set defaults to enable or disable exporting metadata in all affected file formats on whether you want complete privacy or not. Select Edit → Preferences, then select Image Import & Export and go to the section Export Policies .

6.38.1. Activating the Metadata command

You can access this command from the main menu through Image → Metadata.

6.38.2. The Metadata Submenu

GIMP uses two plug-ins:

- Edit Metadata.
- View Metadata.









6.39. Metadata Editor

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6.39. Metadata Editor



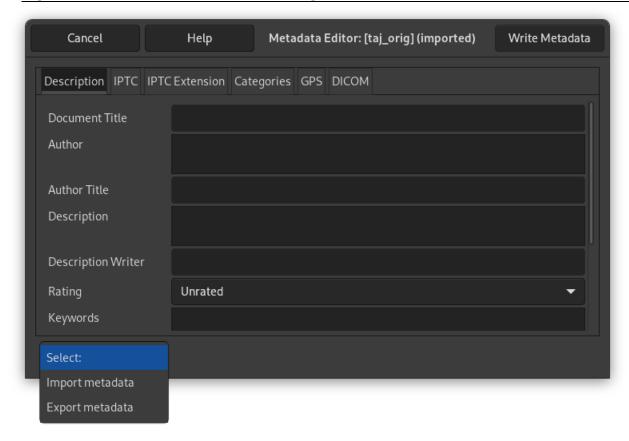


6.39. Metadata Editor

The metadata editor allows you to edit the most common XMP metadata tags. Tags that have a corresponding IPTC tag are synchronized when writing the metadata. When opening the editor, the IPTC metadata is also checked. When only IPTC is available, the values of those tags are used to fill in the XMP metadata fields. If both are available, but different, they are in most cases concatenated. It is currently not possible to edit Exif metadata.

When you are finished editing the metadata press the Write Metadata button to update the metadata in the image, or use Cancel if you don't want your changes to be added to the image. Write Metadata does not save the metadata to a file. Do that the usual way by saving or exporting your image. The metadata editor currently consists of the following tabs: Description, IPTC, IPTC Extension, Categories, GPS, and DICOM. We will explain these in more detail below. At the bottom of the editor there is also a Select: drop-down button, where you can choose to Import metadata or Export metadata.

Figure 16.87. "Metadata Editor" dialog



6.39.1. Activating the Command

You can access this command from the main menu through Image → Metadata → Edit Metadata.

6.39.2. General considerations when adding metadata to an image

Adding metadata to an image is a good way to give others some general information about your image, like a description what the image is about, where it was taken if it is a photo, the creator and more specific Copyright information.

It is good to realize that certain kinds of information can also be used to reveal personal information about you or others in the image. You have to make your own decision about what you are comfortable with in sharing with others.

More specific, things like a GPS location, your name, an address, or recognizable people or buildings in an image may be used to identify you or others.

6.39.3. Description

The Description tab allows you to edit metadata that relates to general information about the image, such as the image creator, a description of the image, Copyright, etc.

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Document Title

The Document Title field is used to give a short name consisting of text and/or numbers to reference your image.

Author

The Author field is used to tell who made the image. Multiple names, one per line, can be entered here.

Author Title

The Author Title field is used to tell the job title of the creator of the image. This will generally only be useful if you created this image as part of your job.

Description

The Description field is used to give a longer description of your image. Sometimes this is also used to add Copyright information.

Description Writer

The Description Writer field is used to identify the person who wrote or edited the description metadata. Multiple names can be entered, separated by a comma.

Rating

The Rating field is used to give a quality rating to this image. The drop-down list allows you to select a value from 1 to 5, or leave it unrated.

Keywords

The Keywords field allows you to add keywords to the image. Keywords are words or sentences that describe your image. Multiple keywords can be added; each keyword should be entered on its own line.

Copyright Status

The Copyright Status field is used to tell what sort of Copyright the image has. You can choose between Unknown (default), Copyrighted (someone owns or claims the copyright for this image), or Public Domain (the rights to this image have been released to the Public Domain).

Copyright Notice

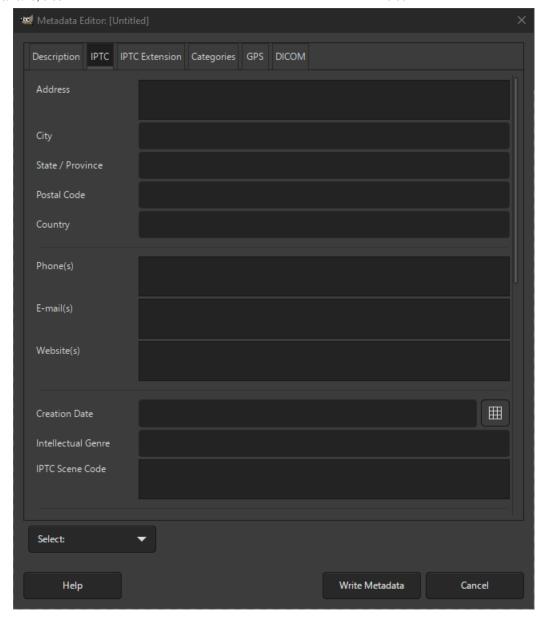
The Copyright Notice field allows you to write a text specifying what Copyright is attached to this image.

Copyright URL

The Copyright URL field can be used to direct the viewers of this image to an online website where more details can be found about the Copyright on this image.

6.39.4. IPTC

Figure 16.88. IPTC tab



The IPTC tab allows you to edit more detailed creator, location and credits information, based on the IPTC metadata. As explained above, you have to decide what information you want to share.

Contact Information

These fields serve as contact information for the person or organization this image belongs to.

Address

This field is used to enter the address.

City

This field is used to enter the city.

State / Province

This field is used to enter the state or province.

Postal Code

This field is used to enter the postal code or zip code.

Country

This field is used to enter the country.

Phone(s)

This field is used to enter the phone number(s).

Email(s)

This field is used to enter the email address(es).

Website(s)

This field is used to enter the website(s).

Creation Date

This field is used to enter the date and optionally the time this image was created. This is not necessarily the same as the date and time a photo was taken.

The button next to this field allows you to select a date. However, this does not let you to pick a time. You will have to enter that manually.

Intellectual Genre

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Describes the nature, intellectual, artistic or journalistic characteristic of an image.

IPTC Scene Code

Describes the scene of an image. Specifies one or more terms from the IPTC "Scene-NewsCodes". Each Scene Code should be on a separate line and consists of a string of 6 digits.

Image Location Information

These fields serve to identify the image location. All of the fields in this section are considered legacy, meaning you usually would not use these to add new information.

We recommend instead to use similar named fields in the IPTC Extension tab for better compatibility with other apps using metadata.

Sublocation

This field is used to enter the location shown in the image.

City

This field is used to enter the city.

State / Province

This field is used to enter the state or province.

Country

This field is used to enter the name of the country.

Country ISO-Code

This field is used to enter the ISO code of a country.

Urgency

A field originally defined by Photoshop and nowadays considered deprecated and mostly left alone.

Headline

A brief synopsis of the caption. According to the IPTC Headline is not the same as Document Title.

IPTC Subject Code

Specifies one or more subjects from the IPTC Subject-NewsCodes to categorize the image. Each subject is represented as a string of 8 digits; each subject should be on a separate line. This field is also considered deprecated and rarely used.

Job Identifier

A field used to identify the job this image belongs to in a business environment.

Instructions

A field with instructions from the creator of the image to the receiver.

Credit Line

A field that specifies who to give credit when using this image.

Source

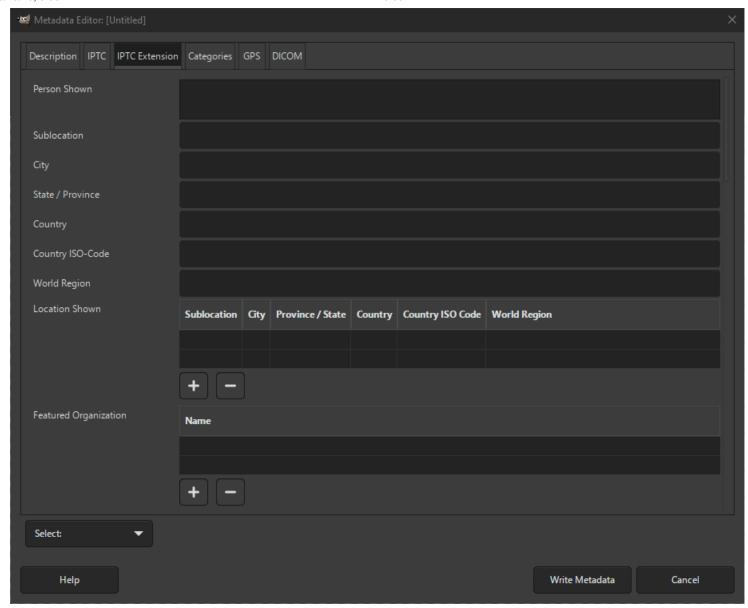
A field that specifies the name of a person or party who had a role in the content supply chain of making the image. This can be someone else than the creator.

Usage Terms

A field specifying the license for using this image.

6.39.5. IPTC Extension

Figure 16.89. IPTC Extension tab



The IPTC Extension is an extension of the original IPTC metadata specification that allows more detailed information. In most cases it is recommended to enter your information here instead of similar fields in the IPTC tab.

A lot of the metadata fields here are specifically targeted at professional use cases in organizations. There is no need to fill in all fields. You can limit yourself to what is relevant for you.

Person Shown

This field can be used to list the names of persons in an image. Each name should be listed on a separate line.

Information about the location the image was created

Sublocation

This field is used to enter the location.

City

This field is used to enter the city.

State / Province

This field is used to enter the state or province.

Country

This field is used to enter the name of the country.

Country ISO-Code

This field is used to enter the ISO code of a country.

World Region

This field is used to enter the name of the region of the world.

Editing metadata information in tables

We use tables to show and edit certain types of metadata. This is a short overview of how to edit data in a table.

In a table, each row lists information about one specific event or occurrence, where each column pertains to one specific part of that information. Multiple rows can be added when needed.

Below each table you see two buttons, one with a plus sign, to add a new row, and another with a minus sign, to remove an existing row.

To edit the metadata in one of the columns, first select the corresponding row by clicking on it. Then double-click on the column you want to edit. You will see an edit cursor in that field that will allow you to add and change the text in that field.

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If you make a mistake while editing, you can use the **Esc** key to cancel your changes. If you are content with your text, use **Enter** or click somewhere else inside the table to finalize the change. If you click outside the table, the changes are cancelled.

Location Shown

This table allows you to specify one or more locations that are shown in your image. The columns use the same basic data as that for the location created shown at the top of this tab page.

Featured Organization

This table allows you to specify one or more names of organizations that are shown in your image, one per row.

For information about editing metadata in a table, see here.

Organization Code

This table allows you to specify one or more organization codes related to the organizations that are shown in your image, one per row.

For information about editing metadata in a table, see here.

Event

This field allows you to enter the name or description of the event at which this image was taken.

Artwork or Object

This table allows you to specify one or more pieces of artwork or objects that are shown in your image, one per row.

For information about editing metadata in a table, see here.

The following types of metadata can be entered in the respective columns.

Title

The title of the artwork or object.

Date Created

The date and optionally the time the artwork or object was created.

Creato

The name of the artist that created the artwork or object.

Source

The organization registering the artwork or object in the image for inventory purposes.

Source Inventory ID

The inventory identification issued by the source organization for the artwork or object in the image.

Copyright Notice

The copyright notice for claiming the intellectual property for the artwork or an object in the image.

Additional Model Info

Information about the model(s) in the image.

Model Age

List the age(s) of the models shown in the image, one per line.

Minor Model Age Disclosure

Age of the youngest model pictured in the image, at the time that the image was taken. Select one of the options from the drop-down list.

Model Release Status

Enter information about the model releases, that authorize usage. Select one of the options from the drop-down list.

Model Release Identifier

This table allows you to specify one or more model release identifiers that identify model release documents of models shown in your image, one per row.

For information about editing metadata in a table, see here.

Image Supplier Name

The name of the supplier of the image, which is not necessarily the owner or creator.

Image Supplier ID

The ID that identifies the supplier of the image.

Supplier's Image ID

The ID by which the supplier identifies the image.

Registry Entry

Max Available Width

The maximum width in pixels of the original photo from which this image has been derived.

Max Available Heigth

The maximum heigth in pixels of the original photo from which this image has been derived.

Digital Source Type

The type of the source of this digital image. Select one of the values from the drop-down list. This lists the values from the official <u>Digital Source Type NewsCodes vocabulary</u>.

Image Creator

This table allows you to enter the names and optionally identifiers of the creator(s) of the image, one creator per line.

For information about editing metadata in a table, see here.

Copyright Owner

This table allows you to enter the names and optionally identifiers of the copyright owner(s) of the image, one per line.

For information about editing metadata in a table, see here.

Licensor

This table allows you to specify details about the persons or organizations that can be contacted for obtaining a license to use this image, one per row.

For information about editing metadata in a table, see here.

The following types of metadata can be entered in the respective columns.

Name

The name of a licensor.

Identifier

The identifier with which the licensor can be identified.

Phone number 1

The phone number at which the licensor can be reached.

Phone type 1

The type of phone number can be selected from a drop-down list.

Phone number 2

The phone number at which the licensor can be reached.

Phone type 2

The type of phone number can be selected from a drop-down list.

Email address

The email address at which the licensor can be reached.

Web address

The website at which the licensor can be reached.

Property Release Status

Enter information about the property releases, that authorize usage of the properties appearing in the image. Select one of the options from the drop-down list.

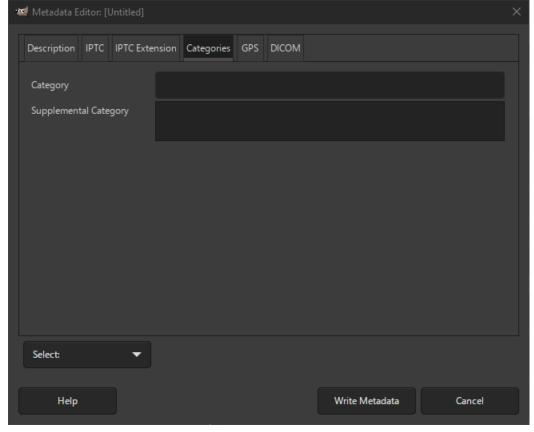
Property Release Identifier

This table allows you to specify one or more property release identifiers that identify property release documents of properties shown in your image, one per row.

For information about editing metadata in a table, see here.

6.39.6. Categories

Figure 16.90. Categories tab



The Categories tab allows you to edit metadata that indicates what categories an image belongs to.

Category

The category this image belongs to, usually a three-letter code.

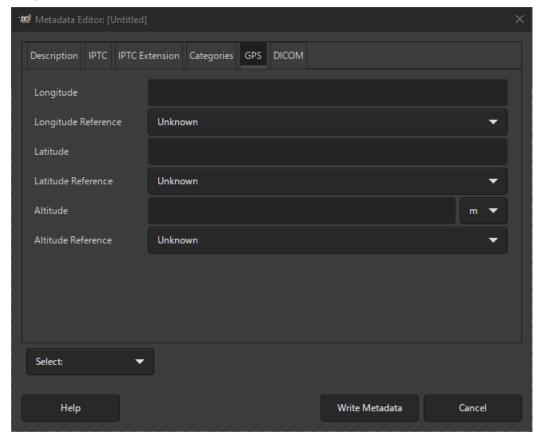
This is a deprecated field and should generally not be used to add new information. Use IPTC Subject Code on the IPTC tab instead.

Supplemental Category

The supplemental category this image belongs to, consisting of free-form text. This is a deprecated field and should generally not be used to add new information.

6.39.7. GPS

Figure 16.91. GPS tab



The GPS tab allows you to edit metadata related to GPS information, the information that shows you at what exact location the image was taken.

Longitude

The longitude part of the GPS location information. Note that this will only be valid and saved when the Longitude Reference is also set and not Unknown.

This information is usually already set when taking an image with a digital camera.

Valid values consist of 1, 2 or 3 numbers that specify the degrees, minutes, and seconds of the longitude.

See the following examples: 10deg 15' 20", or 10\u00b0 15' 20", or 10:15:20.45, or 10 15 20, or 10 15.30, or 10.45.

Longitude Reference

The longitude reference part of the GPS location information. This is required to be set for a valid longitude. Choose either East or West from the drop-down list.

Latitude

The latitude part of the GPS location information. Note that this will only be valid and saved when the Latitude Reference is also set and not Unknown. See longitude for information on how to enter this information.

This information is usually already set when taking an image with a digital camera.

Latitude Reference

The latitude reference part of the GPS location information. This is required to be set for a valid latitude. Choose either North or South from the drop-down list.

Altitude

The altitude part of the GPS location information, which is the height above, or below sea level. Note that this will only be valid and saved when the Altitude Reference is also set and not Unknown. The button to the right of this field let's you choose whether the altitude is specified in meters (m) or feet (ft). A valid value consists of one number, e.g. 100, or 12.24.

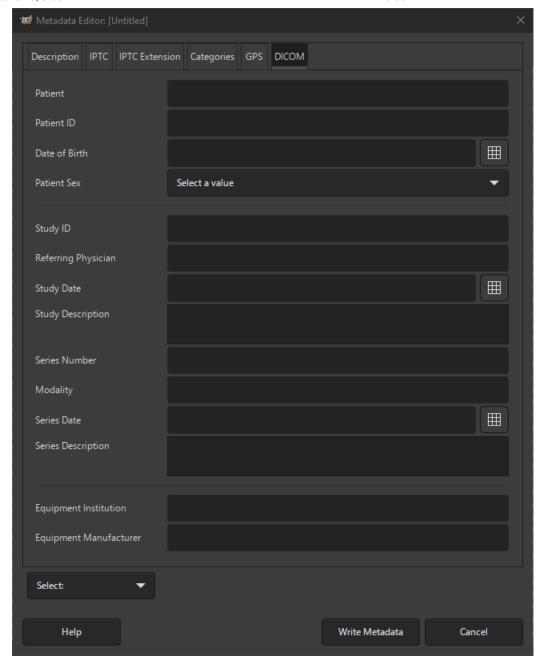
This information is sometimes already set when taking an image with a digital camera.

Altitude Reference

The altitude reference part of the GPS location information. This is required to be set for a valid altitude. Choose either Above sea level or Below sea level from the drop-down list.

6.39.8. DICOM

Figure 16.92. DICOM tab



The DICOM tab allows you to edit metadata that relates to so-called DICOM metadata. That is medical information, usually related to x-ray images. Most images usually don't have this kind of information, these fields are empty most of the time. Even if you have images that contain this information, you should consider removing most if not all of this metadata when you intend to share it, since it can be highly sensitive personal health information.

Patient

The name of the patient.

Patient ID

The ID of the patient.

Date of birth

The birth date of the patient.

Patient Sex

Select the sex of the patient from the drop-down list.

Study ID

The Study ID that identifies the specific study for which this image was used.

Referring Physician

The physician that referred the patient.

Study Date

The date that the study took place.

Study Description

A description of the study that was performed.

Series number

The series number of this image.

Modality

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The date that the study took place.

Series date

The date this series images was taken.

Series Description

A description of this series.

Equipment Institution

The institution that owns the equipment.

Equipment Manufacturer

The maker of the equipment.

6.39.9. Importing and Exporting metadata

The Select: drop-down button at the bottom of the dialog, is where you can choose to Import or Export metadata. A good way to have your metadata filled with pre-defined information, is to open a new image without metadata, then in the metadata editor fill in all fields that you care about. You then choose Export metadata here and save it under a name you can remember. Next time you need to fill in your information, you choose Import metadata, then select the file to read that information from, and all metadata fields will be overwritten or filled with the information you saved previously.



6.38. "Metadata" Submenu



6.40. Metadata Viewer

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6.40. Metadata Viewer



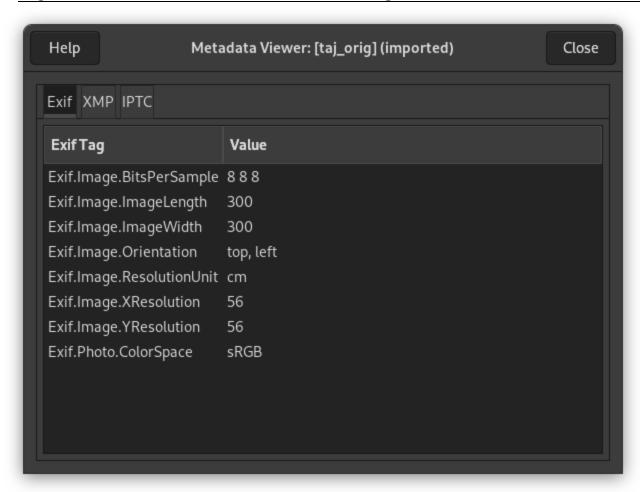
6. The "Image" Menu



6.40. Metadata Viewer

This plug-in allows you to view all Exif, IPTC, and XMP metadata present in the current image. To change or add metadata, you can use the <u>Metadata Editor</u>.

Figure 16.93. "Metadata Viewer" dialog



6.40.1. Activating the Command

You can access this command from the main menu through Image → Metadata → View Metadata.

6.40.2. "Metadata Viewer" Options

Each of the three metadata types is shown in its own tab. Check the links below for an explanation of what they are.

Exif: see <u>EXIF</u>XMP: see <u>XMP</u>IPTC: see IPTC

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6.39. Metadata Editor

7. The "Layer" Menu

7. The "Layer" Menu







7. The "Layer" Menu

7.1. Introduction to the "Layer" Menu

Figure 16.94. The Contents of the "Layer" Menu

Figure 16.94. The	Contents o
Layer	
New Layer	Shift+Ctrl+N
New from Visible	
New Layer Group	
Duplicate Layer	Shift+Ctrl+D
Merge Down	
Delete Layers	
Stack	>
Mask	•
Transparency	>
Transform	>
Layer Boundary Size	
Layers to Image Size	
Scale Layer	
Resize Layers to Selection	on
Crop Layers to Content	

The commands in the Layer menu allow you to work with layers.

In addition to accessing the Layer menu from the main menu and by right-clicking on the image window, you can work on layers by opening the Layer dialog and, for example, change layer transparency and visibility, create new layers and layer groups, add a layer mask, merge or duplicate layers. This dialog also has a right-click context menu with mostly the same commands as shown in the main Layer menu.



Note

Besides the commands described here, you may also find other entries in the menu. They are not part of GIMP itself, but have been added by third-party plug-ins. You can find information about the functionality of a plug-in by referring to its documentation.









7.2. New Layer

7.2. New Layer



7. The "Layer" Menu



7.2. New Layer

The New Layer... command opens the "Create a New Layer" dialog that allows you to add a new, empty layer to the layer stack of the image, just above the active layer.



Note

When a <u>floating selection</u> is present, this command will show up as To New Layer. Using this, will turn the floating selection into a normal layer without opening the New Layer dialog.

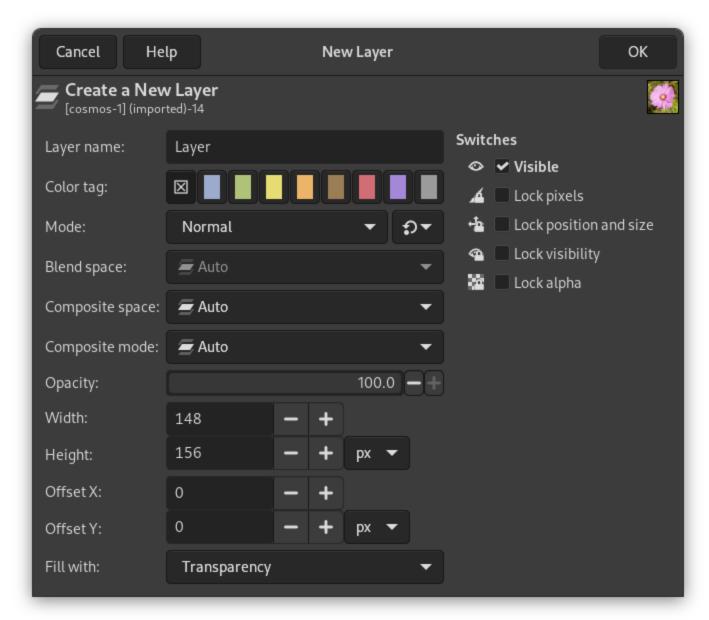
7.2.1. Activating the Command

You can access this command

- From the main menu through Layer → New Layer....
- By using the keyboard shortcut Shift + Ctrl + N.
- From the <u>Layers Dialog</u>, you can access it through the New Layer command of its context menu, or by clicking on the icon button on the bottom of that dialog.

7.2.2. Description of the "New Layer" Dialog

Figure 16.95. The "New Layer" dialog



Below the title "Create a new layer", the name of the image that this new layer will belong to, is displayed. To the right of the title a thumbnail of that image is shown. This will enable you to check that you are adding the layer to the correct image when there is more than one image open.

Layer Name

The name of the new layer. It does not have any functional significance; it is simply a convenient way for you to remember the purpose of the layer. The default name is "Layer", but it remembers the last name you used. If a layer with the name you chose already exists, a number is automatically appended to it to make the name unique (e.g., "Layer #1") when you click OK to create the layer.

Color tag

If you click on one of these color buttons, the "Eye" icon box of the created layer will have this color. This can help you identify or group layers to make them easier to spot when you have a lot of layers in your image.

Mode

A layer's mode determines how the layer is combined with the layers below it. The default is "Normal". The drop-down list offers a wide choice of layer modes, also known as blend modes. On the right, there is another drop-down list to select between "Default" or "Legacy" layer modes.

Layer modes are described in more detail in Layer Modes and Legacy Layer Modes.

Blend space, Composite space

The color space used for blending or compositing the layer with the layers below it. "Blending" determines how the colors of the upper and lower layer are mixed together, and "compositing" how the upper and lower layer are merged together with respect to the transparency of each pixel.

Depending on the layer mode (see above) one or both of these settings may be disabled. It is only enabled for layer modes where setting this has any effect. When enabled, the default is Auto. The other choices are RGB (linear) and RGB (perceptual). Note that what Auto translates to, depends on the chosen layer mode. It is not the same for all modes. Some use linear, others use perceptual.

The linear and perceptual (non-linear) encodings are described in <u>choosing precision and encoding</u> and in the Glossary.



Note

When changing the layer mode, both Blend space and Composite space are always reset to Auto to make sure the settings make sense for that particular layer mode.

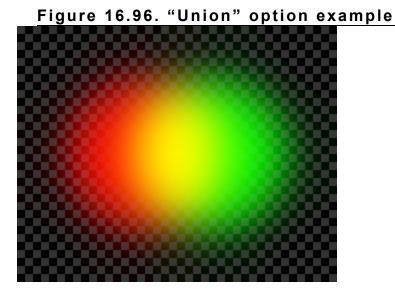
Composite mode

The layer Mode, sometimes referred to as its "blend mode" (Normal, Multiply, etc.), determines how the *color values* of the layer and its backdrop are combined (together with the Blend space setting). The composite mode of a layer determines how the *alpha values* of the layer and its backdrop are combined (together with the Composite space setting). The layer's backdrop is the content against which the layer is composited; namely, it's the combination of the layers below it.

There are two regions of interest when compositing the layer against its backdrop: the opaque region of the backdrop, and the opaque region of the layer. The layer's blend mode determines how to combine the colors of the *intersection* of these two regions: i.e., the common opaque region of both the backdrop and the layer (pixels belonging to only one of these regions don't need to be combined with anything, and retain their original color). The layer's composite mode determines which part of these regions to keep, and which to discard.

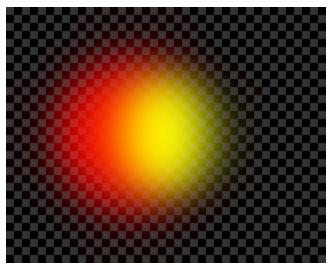
The example images below show the composition of two layers — the bottom layer containing a red feathered circle, and the top layer containing a green feathered circle — using "Addition" mode, and different composite modes (applied to the top layer).

Union: keeps the opaque regions of both the layer and its backdrop, i.e their union.



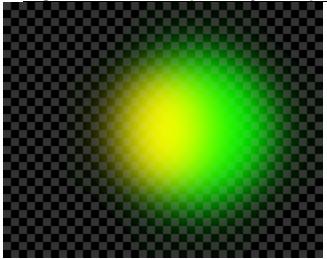
• Clip to backdrop: keeps only the opaque regions of the backdrop (this includes the common opaque region to both the backdrop and the layer i.e their intersection).

Figure 16.97. "Clip to backdrop" option example



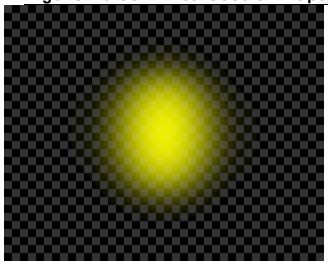
• Clip to layer: keeps only the opaque region of the layer (this includes the common opaque region to both the backdrop and the layer, i.e their intersection).





• Intersection: keeps only the opaque region to both the backdrop and the layer, i.e their intersection.

Figure 16.99. "Intersection" option example



• Auto: "Auto" mode is not a separate composite mode, but rather corresponds to one of the other composite modes, depending on the layer's blend mode: for "Normal", "Dissolve", and "Merge", it corresponds to "Union", and for the other modes (that support different composite modes) it corresponds to "Clip to Backdrop".

Opacity

Sets the opacity of painting on the layer. Default is 100%.

Width, Height

The dimensions of the new layer. When the dialog appears, the values are initialized to the dimensions of the image. You can change them by using the two text boxes. You can also change the units in the pull-down menu to the right.

Offset X, Offset Y

The default origin of the new layer is the upper left corner of the image canvas. Here, you can set the exact position of the layer. By choosing a negative offset, you can set the layer to be partially outside the image canvas.

Fill With

There are numerous options for filling the new layer: the current Foreground color, the current Background color, Middle Gray (CIELAB), White, Transparency, and the current Pattern.

Switches

The switches Visible, Lock pixels, Lock position and size, Lock visibility and Lock alpha on the right side of this dialog are described in the Layers dialog documentation. See Layer Attributes.







7. The "Layer" Menu



7.3. New from Visible

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7.3. New from Visible



7. The "Layer" Menu



7.3. New from Visible

This command merges the visible layers into a new layer at the top of the layer stack.

The aim is to further manipulate the result, but keep the steps that created this situation. Example: You want to selectively blur some areas of your multilayer image. You create a new layer from what you see, blur it and then apply a layer mask to erase the parts you want your original work to show.

7.3.1. Activating the Command

You can access this command

- From the main menu through Layer → New from Visible.
- From the <u>Layers Dialog</u>, you can access it through the New from Visible command of its context menu.







7.2. New Layer



7.4. New Layer Group

7.4. New Layer Group



7. The "Layer" Menu



7.4. New Layer Group

This command creates a new layer group directly. Please refer to Section 5, "Layer Groups".

7.4.1. Activating the Command

You can access this command

- From the main menu through Layer → New Layer Group.
- From the <u>Layers Dialog</u>, you can access it through the New Layer Group command of its context menu, or by clicking on the circle icon button on the bottom of that dialog.







7.3. New from Visible



7.5. Duplicate layers

7.5. Duplicate layers



7. The "Layer" Menu



7.5. Duplicate layers

The Duplicate Layers command adds a copy of each selected layer to the image. The name of each new layer is the same as the name of the original layer, but with "copy" or a number appended to it.

Note that if there are any <u>parasites</u> attached to the selected layers, they are not duplicated.

7.5.1. Activating the Command

You can access this command

- From the main menu through Layer \rightarrow Duplicate Layers.
- By using the keyboard shortcut | Shift |+ Ctrl |+ D |
- From the <u>Layers Dialog</u>, you can access it through the Duplicate Layers command of its context menu, or by clicking on the <u>Dialog</u> icon button on the bottom of that dialog.







7.4. New Layer Group



7.6. Anchor Floating Layer or Mask

7.6. Anchor Floating Layer or Mask



7. The "Layer" Menu



7.6. Anchor Floating Layer or Mask

If you have created a floating selection, a temporary layer, called a "floating layer" or "floating selection", is added to the layer stack. As long as the floating layer persists, you can only work on that layer.

To work on the rest of the image, you must "anchor" the floating layer to the former active layer with the Anchor Floating Layer or Mask command; or convert it to a new layer with the <u>To New Layer</u> command. The anchor menu command is only visible if a floating selection is present.



Note

If there is an active selection tool, the mouse pointer is displayed with an anchor icon when it is outside of the selection.

7.6.1. Activating the Command

You can access this command

- From the main menu through Laver → Anchor Floating Layer or Mask.
- By using the keyboard shortcut | Ctrl |+ | H |.
- From the <u>Layers Dialog</u>, you can access it through the Anchor Floating Layer or Mask command of its context menu, or by clicking on the $\frac{1}{2}$ icon button on the bottom of that dialog.

7.6.2. Alternative Ways of Anchoring a Floating Selection

Please refer to Section 4.5.4, "Anchor a Floating Selection"











7.7. Merge Down

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7.7. Merge Down



7. The "Layer" Menu



7.7. Merge Down

The Merge Down command merges the active layer with the layer just below it in the stack, taking into account the various properties of the active layer, such as its opacity and layer <u>mode</u>. The resulting merged layer will be in Normal mode, have opacity set to 100%, and will have an alpha channel even if the original layers didn't have one. If the layer below is not opaque, or if it is in some mode other than Normal, then this command will generally change the appearance of the image.

The most common use of Merge Down is to construct a layer, by starting with a "base layer" (usually opaque and in Normal mode, so that you can see what you are doing), and adding a "modification layer" on top of it, with whatever shape, opacity, and layer mode you need. In this case, merging down the modification layer will combine the two layers into one, without changing the way the image looks.

The Merge Down command is not available when a floating layer is present.

7.7.1. Activating the Command

You can access this command

- From the main menu through Layer → Merge Down.
- From the <u>Layers Dialog</u>, you can access it through the Merge Down command of its context menu, or by clicking on the <u>\$\frac{1}{2}\$</u> icon button on the bottom of that dialog.













7.8. Merge Layer Groups



7. The "Layer" Menu



7.8. Merge Layer Groups

The Merge Layer Groups command merges all the layers in the selected <u>layer groups</u>, taking into account the various properties of each group, such as its opacity and layer <u>mode</u>.

The resulting merged layers will be in Normal mode, and will inherit the opacity of the layer groups. If the layers inside a group are not opaque, or if they are in some mode other than Normal, then this command will generally change the appearance of the image.



Note

This command is only visible if the selected layers contain at least one layer group.

7.8.1. Activating the Command

You can access this command

- From the main menu through Layer → Merge Layer Groups.
- From the <u>Layers Dialog</u>, you can access it through the Merge Layer Groups command of its context menu, or by **Shift** clicking on the icon button on the bottom of that dialog.











7.9. Delete Layers

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7.9. Delete Layers



7. The "Layer" Menu



7.9. Delete Layers

The Delete Layers command deletes the selected layers from the image.

7.9.1. Activating the Command

You can access this command

- From the main menu through Layer → Delete Layers.
- From the <u>Layers Dialog</u>, you can access it through the Delete Layers command of its context menu, by clicking on the icon button on the bottom of that dialog, or by dragging and dropping the selected layers on top of that button.







7.8. Merge Layer Groups



7.10. The Text Commands of the Layer Menu

7.10. The Text Commands of the Layer Menu



7. The "Layer" Menu



7.10. The Text Commands of the Layer Menu

The commands Discard Text Information, Text to Path, and Text along Path only appear in the Layer menu if a text layer is selected.

7.10.1. The Text Commands

- Section 7.11, "Discard Text Information"
- Section 7.12, "Text to Path"
- Section 7.13, "Text along Path"







7.9. Delete Layers



7.11. Discard Text Information

7.11. Discard Text Information



7. The "Layer" Menu



7.11. Discard Text Information

When you add text to an image, GIMP adds specific text related information. This command lets you discard this information, transforming the selected text layers into normal bitmap layers.

Note that this transformation of text into bitmap is automatically performed when you apply a graphic operation to a text layer. You can get the text information back by undoing the operation which modified the text.



Note

This command only appears in the Layer menu if at least one text layer is selected.

7.11.1. Activating the Command

You can access this command

- From the main menu through Layer → Discard Text Information.
- From the <u>Layers Dialog</u>, you can access it through the Discard Text Information command of its context menu.







7.10. The Text Commands of the Layer Menu



7.12. Text to Path

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7.12. Text to Path



7. The "Layer" Menu



7.12. Text to Path

This command creates a path from the outline of each selected text layer. Each path can be managed through the <u>Paths Dialog</u>. For more information see also <u>Text to Path</u> in Text Management.



Note

This command only appears in the Layer menu if at least one text layer is selected.

7.12.1. Activating the Command

You can access this command

- From the main menu through Layer \rightarrow Text to Path.
- From the Layers Dialog, you can access it through the Text to Path command of its context menu.







7.11. Discard Text Information



7.13. Text along Path

7.13. Text along Path

7.13. Text along Path



7. The "Layer" Menu



7.13. Text along Path

This command wraps the text in the selected text layer along the currently active path. The active path can be changed through the <u>Paths Dialog</u>. For more information see also <u>Text along Path</u> in Text Management.



Note

This command only appears in the Layer menu if one text layer is selected. At least one path needs to be available, or this command will have no effect.

7.13.1. Activating the Command

You can access this command

- From the main menu through Layer → Text along Path.
- From the Layers Dialog, you can access it through the Text along Path command of its context menu.







7.12. Text to Path



7.14. "Stack" Submenu

7.14. "Stack" Submenu



7. The "Layer" Menu



7.14. "Stack" Submenu

The layer stack is simply the list of layers in the Layers dialog. The Stack submenu contains operations which either allow you to change which layers are selected, or change the position of the selected layers in the layer stack. If your image has only one layer, these commands are disabled.

7.14.1. Activating the Submenu

You can access this submenu from the main menu through Layer \rightarrow Stack.

7.14.2. The Contents of the "Stack" Submenu

The Stack submenu contains the following commands:

- Section 7.15, "Select Previous Layers"

- Section 7.16, "Select Next Layers"
 Section 7.17, "Select Top Layer"
 Section 7.18, "Select Bottom Layer"
- Section 7.19, "Raise Layers"
- Section 7.20, "Lower Layers"
- Section 7.21, "Layers to Top"
- Section 7.22, "Layers to Bottom"
- Section 7.23, "Reverse Layer Order"



7.13. Text along Path





7.15. Select Previous Layers

7.15. Select Previous Layers



7. The "Layer" Menu



7.15. Select Previous Layers

The Select Previous Layers command changes the layers that are currently selected. For each contiguous group of selected layers, it starts the selection from the layer above the first one selected, and removes the last selected one from the selection. When one layer is selected, this selects the previous layer (the one above it).



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The keyboard shortcuts for Select Previous Layers and Select Next Layers can be very useful if you frequently pick colors from one layer to use for painting on another layer, especially when you use them with the color-picker tool, which you get by holding down the **Ctrl** key with most of the painting tools.

7.15.1. Activating the Command

You can access this command

- From the main menu through Layer \rightarrow Stack \rightarrow Select Previous Layers.
- By using the keyboard shortcut PgUp .











7.16. Select Next Layers

7.16. Select Next Layers



7. The "Layer" Menu



7.16. Select Next Layers

The Select Next Layers command changes the layers that are currently selected. For each contiguous group of selected layers, it ends the selection at the layer below the last one selected, and removes the first selected one from the selection. When one layer is selected, this selects the next layer (the one below it).

7.16.1. Activating the Command

You can access this command

- From the main menu through Layer \rightarrow Stack \rightarrow Select Next Layers.
- By using the keyboard shortcut | PgDn |.







7.15. Select Previous Layers



7.17. Select Top Layer

7.17. Select Top Layer



7. The "Layer" Menu



7.17. Select Top Layer

The Select Top Layer command makes the top layer in the stack the selected layer for the image and highlights it in the Layers dialog. If the selected layers start at the top of the stack, this menu entry is disabled.

7.17.1. Activating the Command

You can access this command

- From the main menu through Layer → Stack → Select Top Layer.
- By using the keyboard shortcut Home







7.16. Select Next Layers



7.18. Select Bottom Layer

7.18. Select Bottom Layer



7. The "Layer" Menu



7.18. Select Bottom Layer

The Select Bottom Layer command makes the bottom layer in the stack the selected layer for the image and highlights it in the Layers dialog. If the selected layers end at the bottom of the stack, this menu entry is disabled.

7.18.1. Activating the Command

You can access this command

- From the main menu through Layer \rightarrow Stack \rightarrow Select Bottom Layer.
- By using the keyboard shortcut **End**.







7.17. Select Top Layer



7.19. Raise Layers

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7.19. Raise Layers



7. The "Layer" Menu



7.19. Raise Layers

The Raise Layers command raises the selected layers one position in the layer stack. If the selected layers already start at the top, or if there is only one layer, this menu entry is disabled.

7.19.1. Activating the Command

You can access this command

- From the main menu through Layer → Stack → Raise Layers.
- By clicking the up-arrow icon at the bottom of the Layers dialog.







7.18. Select Bottom Layer



7.20. Lower Layers

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7.20. Lower Layers



7. The "Layer" Menu



7.20. Lower Layers

The Lower layers command lowers the selected layers one position in the layer stack. If the selected layers already end at the bottom of the stack, or if there is only one layer, this menu entry is disabled.

7.20.1. Activating the Command

You can access this command

- From the main menu through Layer \rightarrow Stack \rightarrow Lower Layers.
- By clicking on the down-arrow icon at the bottom of the Layers dialog.







7.19. Raise Layers



7.21. Layers to Top

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7.21. Layers to Top



7. The "Layer" Menu



7.21. Layers to Top

The Layers to Top command raises the selected layers to the top of the layer stack. If the selected layers already start at the top, or if there is only one layer, this menu entry is disabled.

7.21.1. Activating the Command

You can access this command

- From the main $\underline{\text{menu th}}$ rough Layer \rightarrow Stack \rightarrow Layers to Top.
- By pressing the Shift key and clicking on the up-arrow icon at the bottom of the Layers dialog.







7.20. Lower Layers



7.22. Layers to Bottom

7.22. Layers to Bottom



7. The "Layer" Menu



7.22. Layers to Bottom

The Layers to Bottom command lowers the selected layers to the bottom of the layer stack. If the selected layers already end at the bottom of the stack, or if there is only one layer, this menu entry is disabled.

7.22.1. Activating the Command

You can access this command

- From the main $\underline{\text{menu th}}$ rough Layer \rightarrow Stack \rightarrow Layers to Bottom.
- By pressing the Shift key and clicking on the down-arrow icon at the bottom of the Layers dialog.







7.21. Layers to Top



7.23. Reverse Layer Order

7.23. Reverse Layer Order



7. The "Layer" Menu



7.23. Reverse Layer Order

This command reverses the order of the layers. That is, the top layer becomes the bottom layer, and so on until the bottom layer becomes the top layer.

7.23.1. Activating the Command

You can access this command

From the main menu through Layers → Stack → Reverse Layer Order.







7.22. Layers to Bottom



7.24. The "Mask" Submenu

7.24. The "Mask" Submenu



7. The "Layer" Menu



7.24. The "Mask" Submenu

The Mask submenu of the Layer menu contains commands which work with masks: creating a mask, applying a mask, deleting a mask or converting a mask into a selection. All commands except editing a mask also work when multiple masks are selected. See the Layer Masks section for more information on layer masks and how to use them.

7.24.1. Activating the Submenu

You can access this submenu from the main menu through Layer \rightarrow Mask

7.24.2. The Contents of the "Mask" Submenu

The Mask submenu contains the following commands:

- Section 7.25, "Add Layer Masks"
- Section 7.26, "Apply Layer Masks" Section 7.27, "Delete Layer Masks" Section 7.28, "Show Layer Masks"

- Section 7.29, "Edit Layer Mask"
- Section 7.30, "Disable Layer Masks"
- Section 7.31, "Masks to Selection"
- Section 7.32, "Add Masks to Selection"
- Section 7.33, "Subtract Masks from Selection"
- Section 7.34, "Intersect Masks with Selection"









7.25. Add Layer Masks

7.25. Add Layer Masks



7. The "Layer" Menu



7.25. Add Layer Masks

The Add Layer Masks... command adds layer masks to the selected layers. It displays a dialog in which you can set the initial properties of the masks. If the layers already have a layer mask, this menu entry is disabled. A layer mask lets you define which parts of the layer are opaque, semi-transparent or transparent. See the Layer Masks section for more information.

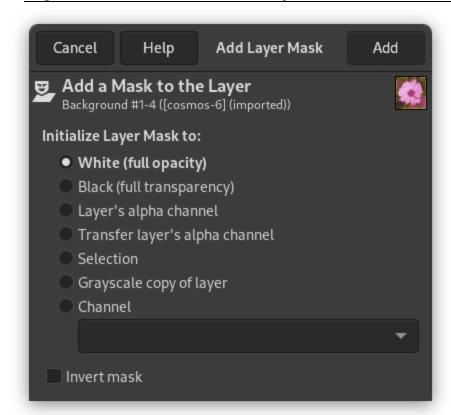
7.25.1. Activating the Command

You can access this command

- From the main menu through Layer → Mask → Add Layer Masks....
- From the <u>Layers Dialog</u>, you can access it through the Add Layer Masks... command of its context menu, or by clicking on the icon button on the bottom of that dialog.

7.25.2. Description of the "Add Layer Masks..." Dialog

Figure 16.100. The "Add Layer Masks..." dialog



Initialize Layer Mask to

This dialog allows you several choices for the initial contents of the layer mask:

White (full opacity)

With this option, the layer mask will make all of the layer fully opaque. That means that you will not notice any difference in the appearance of the layer until you paint on the layer mask.

Black (full transparency)

With this option, the layer mask will make all of the layer fully transparent. This is represented in the image by a checkered pattern on which you will need to paint to make any part of the layer visible.

Layer's alpha channel

With this option, the contents of the alpha channel are used to fill the layer mask. The alpha channel itself is not altered, so the transparency of partially visible areas is increased, leading to a more transparent layer.

Transfer layer's alpha channel

This option sets the layer mask as the previous option, but resets the layer's alpha channel to full opacity afterwards. The effect is to transfer the transparency information from the alpha channel to the layer mask, leaving the layer with the same appearance as before. The visibility of the layer is now determined by the layer mask alone and not by the alpha channel. If in doubt, select this option instead of "Layer's alpha channel", because it will leave the appearance unaltered.

Selection

This option converts the current selection into a layer mask, so that selected areas are opaque, and unselected areas are transparent. If any areas are partially selected, you can click on the Quick Mask button to help you predict what the effects will be.

Grayscale copy of layer

This option converts the layer itself into a layer mask. It is particularly useful when you plan to add new contents to the layer afterwards.

Channel

With this option the layer mask is initialized with a selection mask you have created before, stored in the Channels dialog. Note: that the normal RGBA channels are not part of this list, it only lists the extra channels you have created.

Invert Mask

If you check the Invert mask box at the bottom of the dialog, the resulting mask is inverted, so that transparent areas become opaque and vice versa.

When you click on the Add button, a thumbnail of the layer mask appears to the right of the thumbnail of the layer in the Layers Dialog.











7.26. Apply Layer Masks

7.26. Apply Layer Masks



7. The "Layer" Menu



7.26. Apply Layer Masks

The Apply Layer Masks command merges the selected layer masks with the selected layers. The transparency information in the layer masks is transferred to the alpha channels of their respective layers. If a layer doesn't have an alpha channel, it is created. When that is done, the layer masks are removed.

If the selected layers do not have layer masks, this menu entry is disabled.

See the Layer Masks section for more information.

7.26.1. Activating the Command

You can access this command

- From the main menu through Layer \rightarrow Mask \rightarrow Apply Layer Masks.
- From the <u>Layers Dialog</u>, you can access it through the Apply Layer Masks command of its context menu, or by **Shift** + **Ctrl** clicking on the icon button on the bottom of that dialog.









7.27. Delete Layer Masks



7. The "Layer" Menu



7.27. Delete Layer Masks

The Delete Layer Masks command deletes the layer masks of the selected layers, without modifying the layers they belong to.

This menu command is disabled when none of the selected layers has a mask.

7.27.1. Activating the Command

You can access this command

- From the main menu through Layer \rightarrow Mask \rightarrow Delete Layer Masks.
- From the Layers Dialog, you can access it through the Delete Layer Masks command of its context menu.







7.26. Apply Layer Masks



7.28. Show Layer Masks

7.28. Show Layer Masks



7. The "Layer" Menu



7.28. Show Layer Masks

The Show Layer Masks command lets you toggle between showing the layer and showing the layer mask. When a layer mask is shown you can perform paint operations on it without touching the layer itself.

Although this command can be used to enable showing layer masks for multiple layers, only one of the layer masks will be shown at a time. To view another layer mask, the currently shown layer mask will need to be toggled off first, using the same command as used to show it. When a layer mask is in "show mode" its thumbnail in the Layers Dialog is shown with a green border.

7.28.1. Activating the Command

You can access this command

- From the main menu through Layer → Mask → Show Layer Masks.
- From the <u>Layers Dialog</u>, you can access it through the Show Layer Masks command of its context menu; or by holding down the **Alt** key and clicking on the layer mask's thumbnail in the Layers Dialog.







7.27. Delete Layer Masks



7.29. Edit Layer Mask

7.29. Edit Layer Mask



7. The "Layer" Menu



7.29. Edit Layer Mask

The Edit Layer Mask command is a toggle that switches from editing the layer, to editing the layer mask (if present) and vice versa. When the layer mask is in editing mode, a white border is shown around the mask in the Layers Dialog. Note that editing a layer mask is separate from showing the mask. You can make the layer mask <u>visible</u> to make it easier to see what you are changing on the mask.

7.29.1. Activating the Command

You can access this command

- From the main menu through Layer → Mask → Edit Layer Mask.
- From the <u>Layers Dialog</u>, you can access it through the Edit Layer Mask command of its context menu; or you can click on the thumbnail of the layer mask to make it active.







7.28. Show Layer Masks



7.30. Disable Layer Masks

7.30. Disable Layer Masks



7. The "Layer" Menu



7.30. Disable Layer Masks

The Disable Layer Masks command allows you to temporarily disable the effect of the selected layer masks. A red border will be shown around the thumbnail of the selected layer masks in the Layers Dialog. To enable the layer masks use the same command again.

7.30.1. Activating the Command

You can access this command

- From the main menu through Layer \rightarrow Mask \rightarrow Disable Layer Masks.
- From the <u>Layers Dialog</u>, you can access it through the Disable Layer Masks command of its context menu; or by holding down the | **Ctrl** + **Alt** keys and clicking on the layer mask's thumbnail in the Layers Dialog.







7.29. Edit Layer Mask



7.31. Masks to Selection

7.31. Masks to Selection



7. The "Layer" Menu



7.31. Masks to Selection

The Masks to Selection command converts the layer masks of the selected layers into a selection, which replaces the selection that is already active in the image.

White areas of the layer mask are selected, black areas are not selected, and gray areas are converted into feathered selections. The layer mask itself is not modified by this command.

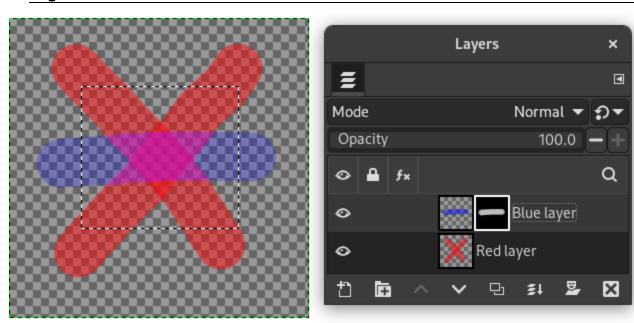
7.31.1. Activating the Command

You can access this command

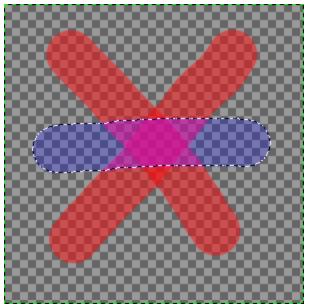
- From the main menu through Layer → Mask → Masks to Selection.
- From the <u>Layers Dialog</u>, you can access it through the Masks to Selection command of its context menu.

7.31.2. Illustration of "Masks to Selection"

Figure 16.101. Illustration of "Masks to Selection"



The original image with a selection and the <u>Layers Dialog</u> with a layer mask created via <u>Add Layer Masks...</u> with the "Layer's alpha channel" option enabled.



The result after applying "Masks to Selection": the selection of the non-transparent pixels of the selected layer replaces the initial selection.



7.30. Disable Layer Masks







7.32. Add Masks to Selection

7.32. Add Masks to Selection



7. The "Layer" Menu



7.32. Add Masks to Selection

The Add Masks to Selection command converts the layer masks of the selected layers into a selection, which is added to the selection that is already active in the image.

White areas of the layer mask are selected, black areas are not selected, and gray areas are converted into feathered selections. The layer mask itself is not modified by this command.

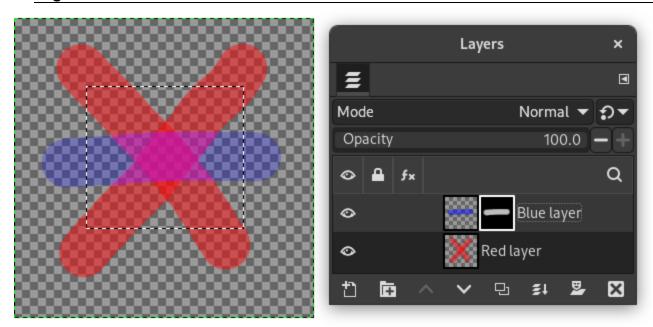
7.32.1. Activating the Command

You can access this command

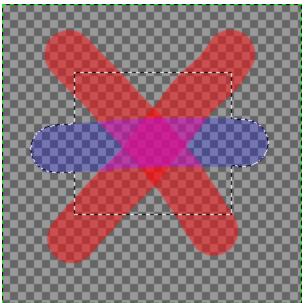
From the main menu through Layer → Mask → Add Masks to Selection.

7.32.2. Illustration of Add Masks to Selection

Figure 16.102. Illustration of Add Masks to Selection



The original image with a selection and the <u>Layers Dialog</u> with a layer mask created via <u>Add Layer Masks...</u> with the "Layer's alpha channel" option enabled.



The result after applying "Add Masks to Selection": the selection of the non-transparent pixels of the selected layer is added to the initial selection.



7.31. Masks to Selection





7.33. Subtract Masks from Selection



7. The "Layer" Menu



7.33. Subtract Masks from Selection

The Subtract Masks from Selection command converts the layer masks of the selected layers into a selection, which is subtracted from the selection that is already active in the image.

White areas of the layer mask are selected, black areas are not selected, and gray areas are converted into feathered selections. The layer mask itself is not modified by this command.

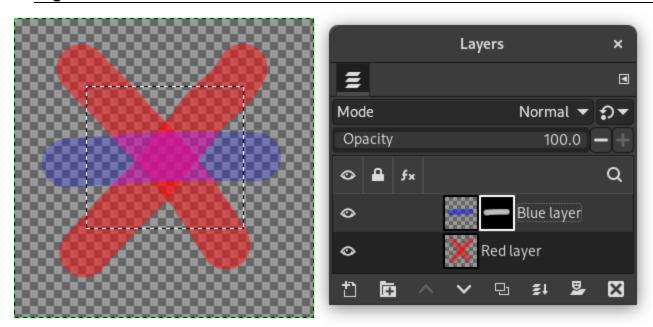
7.33.1. Activating the Command

You can access this command

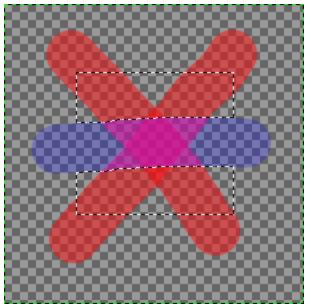
From the main menu through Layer → Mask → Subtract Masks from Selection.

7.33.2. Illustration of Subtract Masks from Selection

Figure 16.103. Illustration of Subtract Masks from Selection



The original image with a selection and the <u>Layers Dialog</u> with a layer mask created via <u>Add Layer Masks...</u> with the "Layer's alpha channel" option enabled.



The result after applying "Subtract Masks from Selection": the selection of the non-transparent pixels of the active layer is subtracted from the initial selection.



7.32. Add Masks to Selection



7.34. Intersect Masks with Selection

7.34. Intersect Masks with Selection



7. The "Layer" Menu



7.34. Intersect Masks with Selection

The Intersect Masks with Selection command converts the layer masks of the selected layers into a selection. The intersection of this selection and the selection that is already active form the new selection for the image. White areas of the layer mask are selected, black areas are not selected, and gray areas are converted into feathered selections. The layer mask itself is not modified by this command.

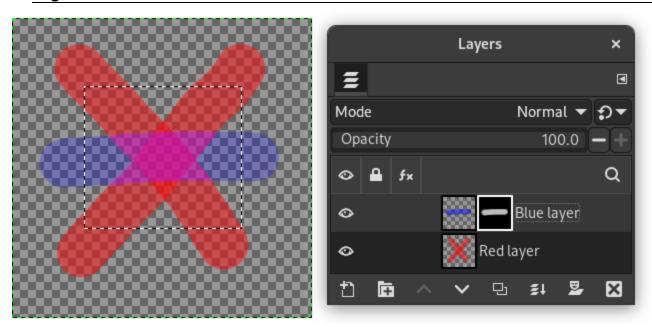
7.34.1. Activating the Command

You can access this command

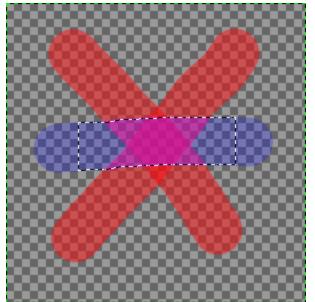
From the main menu through Layer → Mask → Intersect Masks with Selection.

7.34.2. Illustration of Intersect Masks with the Selection

Figure 16.104. Illustration of Intersect Masks with the Selection



The original image with a selection and the <u>Layers Dialog</u> with a layer mask created via <u>Add Layer Masks...</u> with the "Layer's alpha channel" option enabled.



The result after applying "Intersect Masks with Selection": the selection of the non-transparent pixels of the active layer is the common part between the initial selection and the masks.



7.33. Subtract Masks from Selection





7.35. The "Transparency" Submenu



7. The "Layer" Menu



7.35. The "Transparency" Submenu

The Transparency submenu contains commands which use or affect the alpha channel of the active layer. Some of these commands can work with multiple selected layers.

7.35.1. Activating the Submenu

You can access this submenu from the main menu through Layer → Transparency.

7.35.2. The Contents of the "Transparency" Submenu

The Transparency submenu contains the following commands:

- Section 7.36, "Add Alpha Channel"
- Section 7.37, "Remove Alpha Channel"
- Section 7.38, "Color to Alpha"
- Section 7.39, "Semi-Flatten"
- Section 7.40, "Threshold Alpha"
- Section 7.41, "Alpha to Selection"
- Section 7.42, "Add Alpha to Selection"
- Section 7.43, "Subtract Alpha from Selection"
- Section 7.44, "Intersect Alpha with Selection"









Report a bug in GIMP Report a documentation error

7.36. Add Alpha Channel

7.36. Add Alpha Channel



7. The "Layer" Menu



7.36. Add Alpha Channel

The Add Alpha Channel command adds an alpha channel to the selected layers. The alpha channel represents the transparency of a layer.

Most layers, except the background layer, usually already have an alpha channel, unless it was imported from a file format that defined it as not having an alpha channel. For any layer that doesn't have one yet, this command lets you add it. The names of layers that do not have an alpha channel are shown in bold in the Layers Dialog.

7.36.1. Activating the Command

You can access this command

- From the main menu through Layer → Transparency → Add Alpha Channel.
- From the <u>Layers Dialog</u>, you can access it through the Add Alpha Channel command of its context menu.







7.35. The "Transparency" Submenu



7.37. Remove Alpha Channel

7.37. Remove Alpha Channel



7. The "Layer" Menu



7.37. Remove Alpha Channel

The Remove Alpha Channel command removes the Alpha channel of the selected layers. Layers without alpha channel cannot have transparent areas. The transparency is replaced with the background color. If the selected layers do not have an alpha channel, this command is disabled.

7.37.1. Activating the Command

You can access this command

- From the main menu through Layer \rightarrow Transparency \rightarrow Remove Alpha Channel.
- From the <u>Layers Dialog</u>, you can access it through the Remove Alpha Channel command of its context menu.







7.36. Add Alpha Channel



7.38. Color to Alpha

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7.38. Color to Alpha



7. The "Layer" Menu



7.38. Color to Alpha

The Color to Alpha... command makes all pixels with a specified color in the current layer transparent. For more details see <u>Section 8.57, "Color to Alpha..."</u>.

This command only works on a single layer.

7.38.1. Activating the Command

You can access this command

- From the main menu through Layer \rightarrow Transparency \rightarrow Color to Alpha....
- From the main menu through Colors → Color to Alpha... (see <u>Section 8.57, "Color to Alpha..."</u>).







7.37. Remove Alpha Channel



7.39. Semi-Flatten

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7.39. Semi-Flatten



7. The "Layer" Menu



7.39. Semi-Flatten

The Semi-Flatten... command is described in the <u>Semi-Flatten</u> filter chapter. The command is useful when you need an anti-aliased image with indexed colors and transparency.

This command only works on a single layer.

7.39.1. Activating the Command

You can access this command

- From the main menu through Layer \rightarrow Transparency \rightarrow Semi-Flatten....
- From the main menu through Filters → Web → Semi-Flatten... (see <u>Section 15.3, "Semi-Flatten"</u>).







7.38. Color to Alpha



7.40. Threshold Alpha

7.40. Threshold Alpha



7. The "Layer" Menu



7.40. Threshold Alpha

The Threshold Alpha... command converts semi-transparent areas of the active layer into completely transparent or completely opaque areas, based on a threshold you set. It only works on layers which have an alpha channel. If the Lock alpha channel option is checked in the Layers Dialog, the filter will have no effect. This command only works on a single layer.

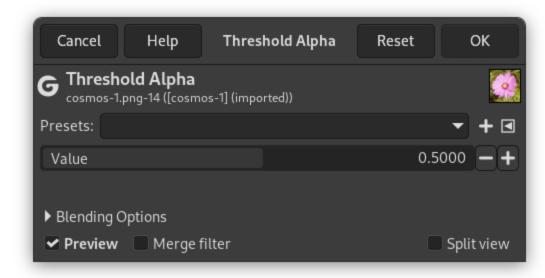
7.40.1. Activating the Command

You can access this command

From the main menu through Layer → Transparency → Threshold Alpha....

7.40.2. Description of the Dialog Window

Figure 16.105. The "Threshold Alpha" filter options dialog



Presets, Input Type, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

Value

The threshold alpha value determines which values will become transparent or opaque. You can set the transparency value to be used by using the slider or by entering a value between 0 and 1 in the input box. All transparency values above this threshold will become opaque and all transparency values below or equal to this threshold will become completely transparent.



Note

This command will never make completely transparent pixels (alpha value = 0) opaque.

A transparency gradient 0-255.

50

127

Threshold set to 50, 127, 210.







7.39. Semi-Flatten



7.41. Alpha to Selection

7.41. Alpha to Selection



7. The "Layer" Menu



7.41. Alpha to Selection

The Alpha to Selection command creates a selection from the combined alpha channels of all selected layers. This selection *replaces* the existing selection.

Opaque areas are fully selected, transparent areas are unselected, and translucent areas are partially selected. The alpha channels of the selected layers are not changed.

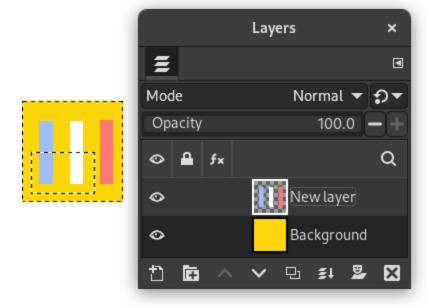
7.41.1. Activating the Command

You can access this command

- From the main menu through Layer → Transparency → Alpha to Selection.
- From the <u>Layers Dialog</u>, you can access it through the Alpha to Selection command of its context menu.

7.41.2. Example

Figure 16.107. Applying "Alpha to Selection"



Example image and its layers.

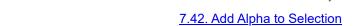


Non-transparent pixels of the active layer have replaced the existing rectangular selection.



7.40. Threshold Alpha

1



7.42. Add Alpha to Selection



7. The "Layer" Menu



7.42. Add Alpha to Selection

The Add Alpha to Selection command creates a selection from the combined alpha channels of all selected layers and adds that to the already existing selection.

Opaque areas are fully selected, transparent areas are unselected, and translucent areas are partially selected. The alpha channels of the selected layers are not changed.

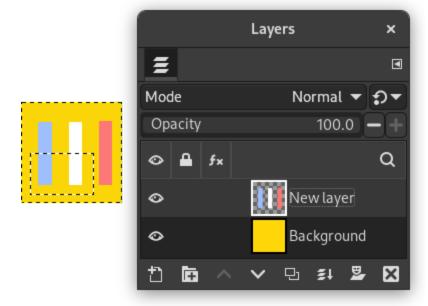
7.42.1. Activating the Command

You can access this command

From the main menu through Layer → Transparency → Add Alpha to Selection.

7.42.2. Example

Figure 16.108. Applying "Add Alpha to Selection"



Example image and its layers.



Non-transparent pixels of the active layer have been added to the existing selection.







7.41. Alpha to Selection

4

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7.43. Subtract Alpha from Selection

7.43. Subtract Alpha from Selection



7. The "Layer" Menu



7.43. Subtract Alpha from Selection

The Subtract Alpha from Selection command creates a selection from the combined alpha channels of all selected layers and subtracts that from the already existing selection.

Opaque areas are fully selected, transparent areas are unselected, and translucent areas are partially selected. The alpha channels of the selected layers are not changed.

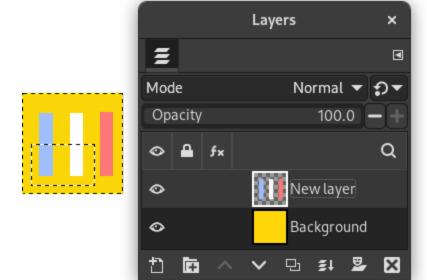
7.43.1. Activating the Command

You can access this command

From the main menu through Layer → Transparency → Subtract Alpha from Selection.

7.43.2. Example

Figure 16.109. Applying "Subtract Alpha from Selection"



Example image and its layers.



Non-transparent pixels of the active layer have been subtracted from the existing rectangular selection.







7.42. Add Alpha to Selection

4

7.44. Intersect Alpha with Selection

7.44. Intersect Alpha with Selection



7. The "Layer" Menu



7.44. Intersect Alpha with Selection

The Intersect Alpha with Selection command creates a selection from the combined alpha channels of all selected layers, which is intersected with the already existing selection. Only common parts of both selections are kept. Opaque areas are fully selected, transparent areas are unselected, and translucent areas are partially selected. The alpha channels of the selected layers are not changed.

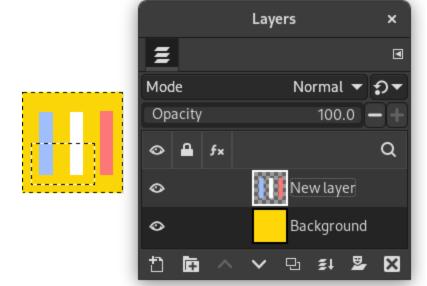
7.44.1. Activating the Command

You can access this command

From the main menu through Layer → Transparency → Intersect Alpha with Selection,

7.44.2. Example

Figure 16.110. Applying "Intersect Alpha with Selection"



Example image and its layers.



Non-transparent pixels of the active layer have been intersected with the existing rectangular selection.







7.43. Subtract Alpha from Selection

4

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7.45. The "Transform" Submenu

7.45. The "Transform" Submenu



7. The "Layer" Menu



7.45. The "Transform" Submenu

The Transform submenu of the Layer menu contains commands which flip or rotate the selected layers of the image.

7.45.1. Activating the Submenu

You can access this submenu from the main menu through Layer \rightarrow Transform.

7.45.2. The Contents of the "Transform" Submenu

The Transform submenu contains the following commands:

- Section 7.46, "Flip Horizontally"
- Section 7.47, "Flip Vertically"
- Section 7.48, "Rotate 90° clockwise"
- Section 7.49, "Rotate 90° counter-clockwise"
- Section 7.50, "Rotate 180""
- Section 7.51, "Arbitrary Rotation"

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Section 7.52, "Offset"











7.46. Flip Horizontally

7.46. Flip Horizontally



7. The "Layer" Menu



7.46. Flip Horizontally

The Flip Horizontally command reverses the selected layers horizontally, that is, from left to right. It leaves the dimensions of the layers and the pixel information unchanged.

7.46.1. Activating the Command

You can access this command

From the main menu through Layer → Transform → Flip Horizontally.

7.46.2. Example

Figure 16.111. Applying "Flip Layer Horizontally"



Before applying the command



The layer after it has been flipped. It looks as if the image has been reflected along the central vertical axis of the layer.











7.47. Flip Vertically

7.47. Flip Vertically



7. The "Layer" Menu



7.47. Flip Vertically

The Flip Vertically command reverses the selected layers vertically, that is, from top to bottom. It leaves the dimensions of the layers and the pixel information unchanged.

7.47.1. Activating the Command

You can access this command

From the main menu through Layer → Transform → Flip Vertically.

7.47.2. Example

Figure 16.112. Applying "Flip Layer Vertically"



Before applying the command



The layer after it has been flipped. It looks as if the image has been reflected along the central *horizontal* axis of the layer.









7.46. Flip Horizontally



7.48. Rotate 90° clockwise

7.48. Rotate 90° clockwise



7. The "Layer" Menu



7.48. Rotate 90° clockwise

The Rotate 90° clockwise command rotates the selected layers by 90° around the center of the layers, with no loss of pixel data.

The shape of the layers is not altered, but the rotation may cause the layers to extend beyond the bounds of the image. This is allowed in GIMP and it does not mean that the layer is cropped. However, you will not be able to see the parts which extend beyond the boundary of the image unless you resize the image canvas or move the layers.

7.48.1. Activating the Command

You can access this command

From the main menu through Layer → Transform → Rotate 90° clockwise.

7.48.2. Example

Figure 16.113. Applying "Rotate 90° clockwise"



Before applying the command



The layer after it has been rotated



7.47. Flip Vertically







7.49. Rotate 90° counter-clockwise

7.49. Rotate 90° counter-clockwise



7. The "Layer" Menu



7.49. Rotate 90° counter-clockwise

The Rotate 90° counter-clockwise command rotates the selected layers by 90° counter-clockwise around the center of the layers, with no loss of pixel data.

The shape of the layers is not altered, but the rotation may cause the layers to extend beyond the bounds of the image. This is allowed in GIMP and it does not mean that the layer is cropped. However, you will not be able to see the parts which extend beyond the boundary of the image unless you resize the image canvas or move the layers.

7.49.1. Activating the Command

You can access this command

• From the main menu through Layer → Transform → Rotate 90° counter-clockwise.

7.49.2. Example

Figure 16.114. Applying "Rotate 90° counter-clockwise"



Before applying the command



The layer after it has been rotated



7.48. Rotate 90° clockwise







7.50. Rotate 180°

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7.50. Rotate 180°



7. The "Layer" Menu



7.50. Rotate 180°

The Rotate 180° command rotates the selected layers by 180° around the center of the layers, with no loss of pixel data

The shape of the layer is not altered. Since the layers have a rectangular shape, a 180° rotation only inverts them and they can't extend beyond the image limits.

7.50.1. Activating the Command

You can access this command

From the main menu through Layer → Transform → Rotate 180°.

7.50.2. Example

Figure 16.115. Applying "Rotate 180°"



Before applying the command



The layer after it has been rotated. It is turned upside down.



7.49. Rotate 90° counter-clockwise







7.51. Arbitrary Rotation

7.51. Arbitrary Rotation



7. The "Layer" Menu



7.51. Arbitrary Rotation

The Arbitrary Rotation command rotates the selected layers by a specified angle. It is an alternate way of accessing the Rotate tool. See the section about that tool for more information.

7.51.1. Activating the Command

You can access this command

- From the main menu through Layer \rightarrow Transform \rightarrow Arbitrary Rotation.
- By using the keyboard shortcut | Shift |+ | R |.

7.51.2. Example

Figure 16.116. Applying "Rotate Arbitrary"



Before applying the command



The layer after it has been rotated 30° clockwise







7.50. Rotate 180°



7.52. Offset

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7.52. Offset



7. The "Layer" Menu



7.52. Offset

The Offset... command shifts the *content* of the active layer. Anything shifted outside the layer boundary is cropped. This command displays a dialog which allows you to specify how much to shift the layer and how to fill the space that is left empty by shifting it. It can be used to create tileable patterns.

This command only works on a single layer.

7.52.1. Activating the Command

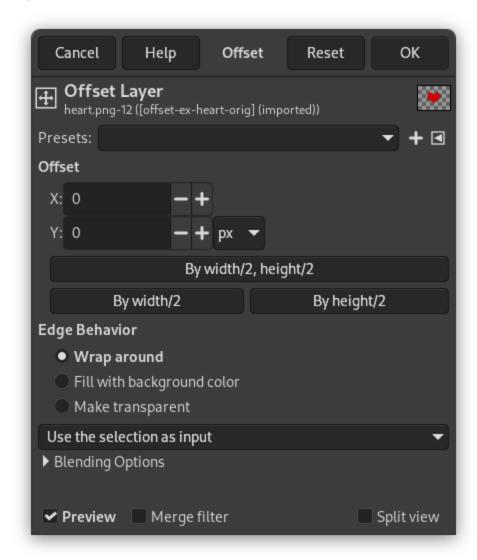
You can access this command

- From the main menu through Layer → Transform → Offset....
- By using the keyboard shortcut Shift + Ctrl + O.

7.52.2. "Offset" Options

Figure 16.117. The "Offset" dialog

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Presets, Preview, Split view

These options are common to GEGL-based dialogs. Please refer to Section 2, "Common Features".

Offset

X, Y

With these two values, you specify how far the contents of the layer should be shifted in the horizontal (X) and vertical (Y) directions.

You can enter the offsets in the text boxes. Positive values move the layer to the right and downward. The default unit is pixels, but you can choose a different unit of measurement with the drop-down menu. A unit of "%" is sometimes useful.

You can also click-and-drag on canvas to move the layer.

By width/2, height/2

With this button, you can automatically set the X and Y offsets so that the contents are shifted by exactly half the width and half the height of the image.

By width/2

Same as above, but only the X offset is set to exactly half the width of the image.

By height/2

Same as above, but only the Y offset is set to exactly half the height of the image.

Edge Behavior

You can specify one of three ways to treat the areas left empty when the contents of the layer are shifted:

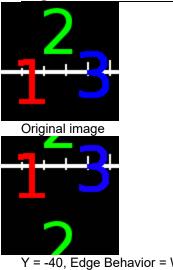
• Wrap around: The empty space on one side of the layer is filled with the part of the layer which is shifted out of the other side, so none of the content is lost.

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- Fill with background color. The empty space is filled with the background color, which is shown in the Color Area of the Toolbox.
- Make transparent: The empty space is made transparent. If the layer does not have an alpha channel, this choice is disabled.

7.52.3. Examples

Figure 16.118. Using "Offset" together with "Edge Behavior"



Y = -40, Edge Behavior = Wrap around



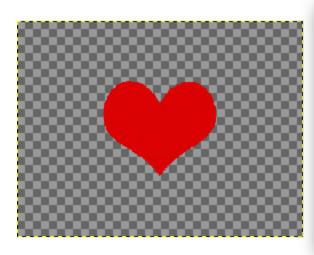
Y = -40, Edge Behavior = Fill with background color

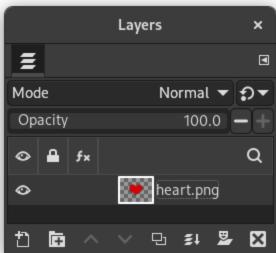


Y = -40, Edge Behavior = Make transparent

Figure 16.119. Repeatable pattern

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Original image; the corresponding <u>Layers Dialog</u>



Create a repeated pattern via the Tile filter



7.51. Arbitrary Rotation







7.53. Layer Boundary Size



7. The "Layer" Menu



7.53. Layer Boundary Size

In GIMP, each layer has its own size that can be changed independently of the size of the image. This command changes the dimensions of a layer, but it does not <u>scale</u> its contents.



Note

By default, painting outside the borders of a layer is ignored. You can, however, enable the <u>Expand Layers</u> setting in the <u>Paint Tool Options</u>, which will automatically extend the size of the layer when painting near one of its borders up to the size of the canvas.

7.53.1. Activating the Command

You can access this command

- From the main menu through Layer → Layer Boundary Size....
- From the <u>Layers Dialog</u>, you can access it through the Layer Boundary Size... command of its context menu.

7.53.2. Description of the "Layer Boundary Size" dialog

Figure 16.120. The "Layer Boundary Size" Dialog



Template

This drop-down list allows you to pick a size from one of the available image templates. For more information on templates see <u>Create a New Image</u> or the <u>Templates Dialog</u>.

When choosing a template that has a different print resolution (ppi) than your image, two new buttons will appear that ask you how to adjust this.

Scale template to ... ppi will adjust the template to the ppi of the image; and Scale image to ... ppi will adjust the image to the ppi of the template.

Layer Size

Width, Height

When the dialog is displayed, the original dimensions of the active layer are shown. You can change them by using the two text boxes. If these boxes are linked together with a chain, the width-to-height ratio is automatically maintained. If you break the chain by clicking on it, you can set the dimensions independently of each other.

Unit of Measurement

The default unit of measurement is pixels. You can change this by using the drop-down menu. For instance, you might use a "%" of the current size.

Offset

X, Y

These coordinates are relative to the layer, not to the image. They are used to move a frame that determines which part of the layer content will be selected for the resized layer. In our example, the layer and the content have the same dimensions, and, of course, you have no frame to move. If you reduce Width and Height, the frame of the resized layer appears in the preview.

A Preview of the layer inside the frame of the canvas

Besides the layer dimensions, a preview represents the layer with the frame of the resized layer. You can move this frame using the X and Y offsets and also dragging the cross-shaped cursor that appears when the mouse pointer moves over the layer area.

Center

The Center button allows you to place the frame at the center of the layer.

Fill With

This allows you to select how to fill the background of the layer when you increase its size. The same options are available here as in the <u>Create New Image</u> Dialog.

7.53.3. Resizing Layer

Increasing the size of a layer

You can't make the size of a layer larger than the image canvas.

If the layer is smaller than the image, you can enlarge the Width and/or Height. If you want to enlarge the layer to the size of the image, it is easier to use <u>Layers to Image Size</u>.

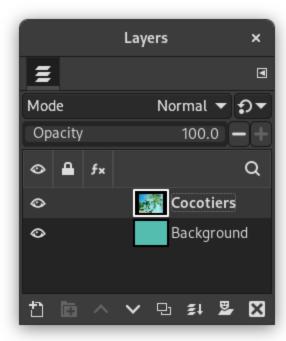
Reducing the size of a layer

If you want to remove unused parts of a layer, you can reduce the size.

Figure 16.121. Example

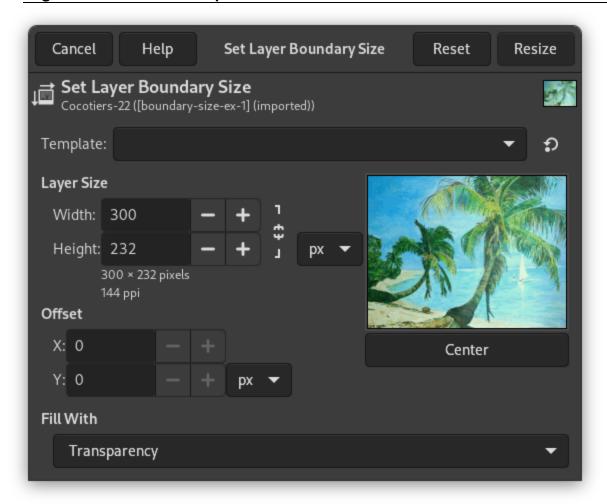


Original image with 2 layers

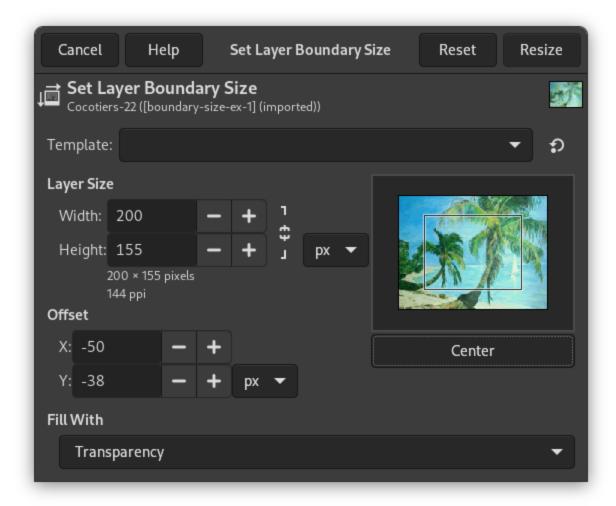


The two layers

Figure 16.122. Example



The selected layer for resizing



The frame representing the new layer size. It has been placed at the center of the layer using the Center button.





If the image has only one layer, it can be more convenient to use the Crop tool.



7.52. Offset







7.54. Layers to Image Size

7.54. Layers to Image Size



7. The "Layer" Menu



7.54. Layers to Image Size

The Layers to Image Size command resizes the layer boundaries to match the image boundaries, without moving the contents of the selected layers with respect to the image.

7.54.1. Activating the Command

You can access this command

- From the main menu through Layer \rightarrow Layers to Image Size.
- From the Layers Dialog, you can access it through the Layers to Image Size command of its context menu.







7.53. Layer Boundary Size



7.55. Scale Layer

3/29/25, 6:21 AM 7.55. Scale Layer

7.55. Scale Layer



7. The "Layer" Menu



7.55. Scale Layer

The Scale Layer... command opens the "Scale Layer" dialog that allows you to resize the layer and its contents. The image loses some of its quality by being scaled. The command displays a dialog where you can set parameters concerning the size of the layer and the image quality.

This command only works on a single layer.



Tip

Another way to scale a layer is using the <u>Scale</u> tool with the Transform set to Layer.

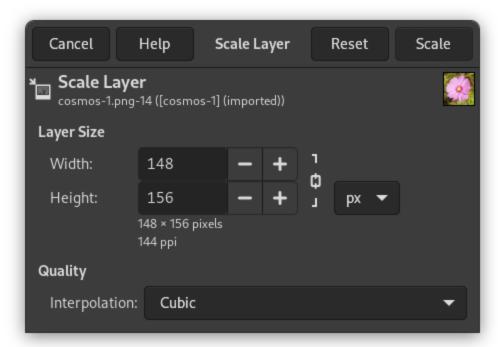
7.55.1. Activating the Command

You can access this command

- From the main menu through Layer → Scale Layer....
- From the Layers Dialog, you can access it through the Scale Layer... command of its context menu.

7.55.2. Description of the "Scale Layer" Dialog

Figure 16.124. The "Scale Layer" dialog



Layer Size

When you enlarge a layer, GIMP has to calculate new pixels from the existing ones. This procedure is called "interpolation". Please note that no matter which interpolation algorithm is used, no new information is added to the image by interpolation. If there are places in the layer which have no details, you will not get any new ones by scaling it. It is much more likely that the layer will look somewhat blurred after scaling. Similarly, when you reduce a layer, the image loses some of its quality when pixels are removed.

3/29/25, 6:21 AM 7.55. Scale Layer

Width, Height

The command displays a dialog which shows the dimensions of the original layer in pixels. You can set the new Width and Height for the layer in the two text boxes. If the adjacent the chain icon is unbroken, the width and height are automatically adjusted to hold their ratio constant. If you break the chain by clicking on it, you can set them separately, but this will result in distorting the layer.

However, you do not have to set the dimensions in pixels. You can choose different units from the drop-down menu. If you choose percent as units, you can set the layer size relative to its original size. You can also use physical units, like inches or millimeters. However if you do that, you should pay attention to the X/Y resolution of the image.

If you enlarge a layer, the missing pixels are calculated by interpolation, but no new details are added. The more the layer is enlarged, and the more times it is enlarged, the more blurred it becomes. The exact result of the enlargement depends upon the interpolation method you choose. After scaling, you can improve the result by using the Sharpen (Unsharp Mask) filter, but it is much better for you to use a high resolution when scanning, taking digital photographs or producing digital images by other means. It is an inherent characteristic of raster images that they do not scale up well.

Quality

To change the size of the layer, GIMP either has to add or remove pixels. The method it uses to do this has a considerable impact on the quality of the result. You can choose the method of interpolating the colors of the pixels from the Interpolation drop-down menu.

Interpolation

This lets you choose the interpolation method used for scaling. See for details about each method the Interpolation documentation of the Transform tools.







7.54. Layers to Image Size



7.56. Resize Layers to Selection

7.56. Resize Layers to Selection



7. The "Layer" Menu



7.56. Resize Layers to Selection

The Resize Layers to Selection command resizes the selected layers to the boundary of the selection by removing any strips at the edge whose contents are all completely unselected. Areas which are partially selected (for example, by feathering) are not resized.

If there is no selection, this menu entry is disabled.

Figure 16.125. Applying "Resize Layers to Selection"



On the left: before applying the command, the layer has a selection that has feathered edges.

On the right: after applying the command, the non-transparent pixels are not cropped, even if they are only semi-transparent.

7.56.1. Activating the Command

You can access this command

From the main menu through Layer → Resize Layers to Selection.











7.57. Crop Layers to Content

7.57. Crop Layers to Content



7. The "Layer" Menu



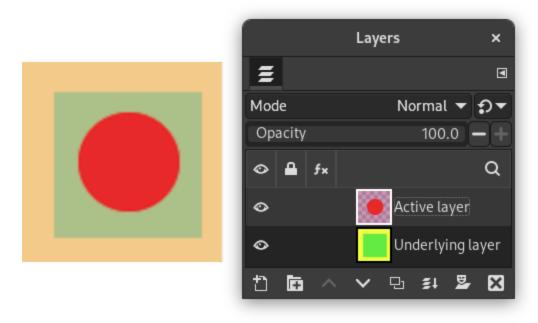
7.57. Crop Layers to Content

The Crop Layers to content command automatically crops the selected layers, unlike the <u>Crop Tool</u>, or the <u>Resize Layers to Selection</u> command, which let you manually define the area to be cropped.

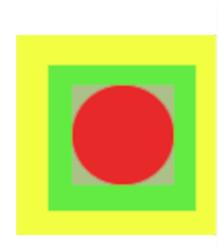
This command removes the largest possible area around the outside edge which all has the same color. It does this by scanning the layer along a horizontal line and a vertical line and cropping the layer as soon as it encounters a different color, whatever its transparency.

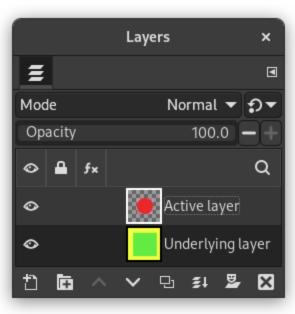
You can use this command to crop a layer to the dimensions of a subject that is lost in a solid background which is too large.

Figure 16.126. "Crop Layers to Content" example



Before applying "Crop Layers to Content"





After applying "Crop Layers to Content": the active layer has been cropped to the size of the circle it contains. Its size is reduced, and the unoccupied part in the canvas is transparent, revealing the yellow and green colors of the underlying layer.

7.57.1. Activating the Command

You can access this command

From the main menu through Layer → Crop Layers to Content.



7.56. Resize Layers to Selection







8. The "Colors" Menu

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8. The "Colors" Menu Chapter 16. Menus

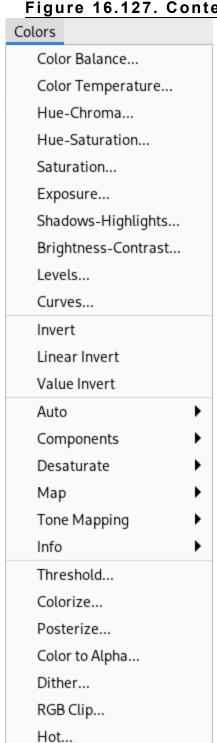




8. The "Colors" Menu

8.1. Introduction to the "Colors" Menu

Figure 16.127. Contents of the "Colors" Menu



3/29/25, 8:42 AM 8. The "Colors" Menu

This section describes the Colors menu, which contains commands that affect the color of the image.



Note

Besides the commands described here, you may also find other entries in the menu. They are not part of GIMP itself, but have been added by third-party plug-ins. You can find information about the functionality of a plug-in by referring to its documentation.

8.1.1. Colors Common Features

The GEGL based filters in the Colors menu have several options in common. Some of these options are only shown under certain conditions.

Presets



Presets give you a quick way to select previously saved settings for the filter you are using. If you have saved presets before, you can select them from the list, or else you can save the current settings by pressing the #button.

The button opens the Preset menu which lets you Import Current Settings from File or Export Current Settings to File, and gives you access to Manage Saved Presets.

Input Type



Note

The input type drop-down list is only visible when a selection is active, and the filter allows choosing the input.

 Use the selection as input If this option is selected, the filter only uses pixels inside the selection as input for the filter.



• Use the entire layer as input If this option is selected, the input of the filter is the entire layer. The output will only affect the selection. The layer outside the selection remains unchanged.



Clipping

3/29/25, 8:42 AM 8. The "Colors" Menu



Note

The clipping drop-down list is only visible when the current layer has an alpha channel, no selection is active, and the filter operation can change the layer size.

This setting determines what to do when the result of this filter is larger than the original layer.

- Adjust The layer will be automatically resized as necessary when the filter is applied. This is the default.
- Clip The result will be clipped to the layer boundary.

Blending Options

When you expand this option by clicking , you can choose the blend Mode to be used when applying the filter, and the Opacity. These work the same as the <u>layer blending options</u>.

Preview

This option is checked by default and displays changes directly on canvas.

Merge filter

By default, GEGL filters are applied non-destructively as <u>layer effects</u>, which means they can still be changed at a later time. When you want to apply the filter immediately to the layer itself, you can enable this option.

This option is remembered, so you only need to change it once if you prefer to always use filters destructively.

Split view

If this option is checked, the image window is divided in two parts. On the left side it shows the effect of the filter applied, and on the right side it shows the image without filter.



Note

You can click-and-drag the line that divides the preview to move it, and Ctrl -click to make the line horizontal, or to switch it back to vertical.







7.57. Crop Layers to Content



8.2. Color Balance

3/29/25, 8:42 AM 8.2. Color Balance

8.2. Color Balance



8. The "Colors" Menu



8.2. Color Balance

The color balance tool modifies the color balance of the active selection or layer. Changes are not drastic. This tool is suitable to correct predominant colors in digital photos.



Note

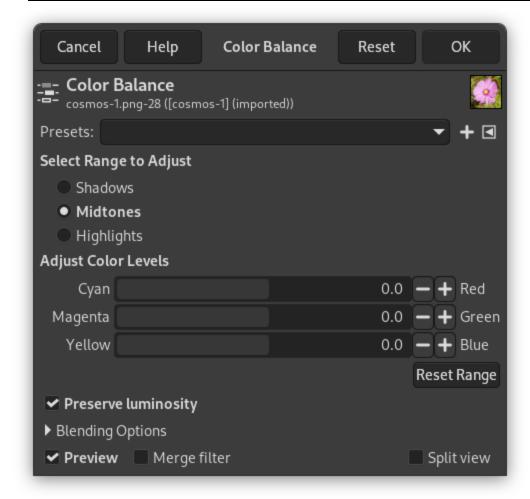
This command does not work on Grayscale images. If the image is Grayscale, the menu entry is disabled.

8.2.1. Activating the Tool

From the main menu: Colors → Color Balance....

8.2.2. Options

Figure 16.128. Color Balance options



3/29/25, 8:42 AM 8.2. Color Balance

"Presets" are a common feature for several Colors commands. You can find its description in <u>Section 8.1.1, "Colors Common Features"</u>.

Select range to adjust

Selecting one of these options restricts the range of colors which are changed with the sliders or input boxes for Shadows (darkest pixels), Midtones (medium pixels) and Highlights (brightest pixels).

Adjust color levels

Sliders and range from the three RGB colors to their complementary colors (CMY). The zero position corresponds to the current level value of pixels in the original image. You can change the pixel color either towards Red or Cyan, Green or Magenta, Blue or Yellow.

Reset Range

This button sets color levels of the selected range back to the zero position (original values).

Preserve Luminosity

This option ensures that brightness of the active layer or selection is maintained. The Value of brightest pixels is not changed.

Blending Options, Preview, Merge filter, Split view

These are common features described in Section 8.1.1, "Colors Common Features".







8. The "Colors" Menu



8.3. Color Temperature

8.3. Color Temperature

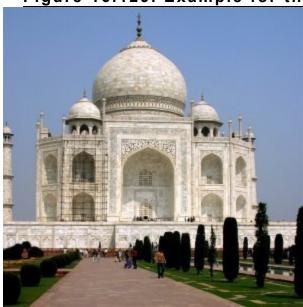




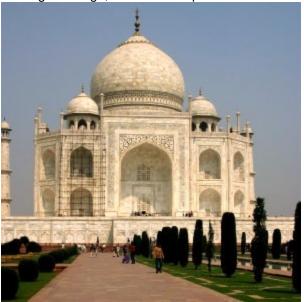
8.3. Color Temperature

8.3.1. Overview

Figure 16.129. Example for the "Color Temperature" filter



Original image, with color temperature estimated at 5,000K



Modified image, with color temperature changed to 6,500K

The Color Temperature filter allows adjusting color temperature of the light source in an image in Kelvin. It can be used to correct the bluish cast in overcast photos, or even (to some extent) the red cast in photos taken under incandescent light with the camera set to daylight.

You can also use it to get interesting creative effects.



Note

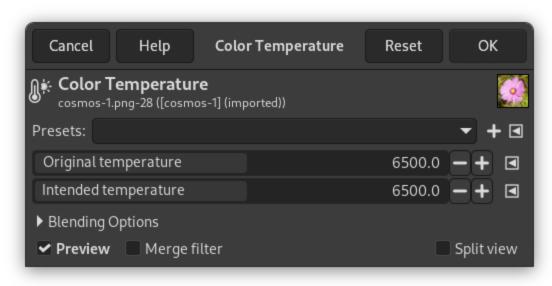
This command does not work on Grayscale images. If the image is Grayscale, the menu entry is disabled.

8.3.2. Activating the Filter

This filter is found in the main menu under Colors → Color Temperature....

8.3.3. Options

Figure 16.130. "Color Temperature" options



Presets

"Presets" are a common feature for several Colors commands. You can find its description in <u>Section 8.1.1, "Colors Common Features"</u>.

Original temperature

This is the estimated original color temperature of the light source in Kelvin. You can change it because the image doesn't necessarily encode that information correctly or at all (and you might or might not have measured it). In addition there's often a mix of light sources (a window, a fill-in flash, etc). But above all else you can get interesting creative effects by changing it.

Intended temperature

This is the desired color temperature of the light source in Kelvin.

Blending Options, Preview, Merge filter, Split view

These are common features described in <u>Section 8.1.1, "Colors Common Features"</u>.



Tip

Both original temperature and intended temperature can be set via presets. To access the presets menu, click the dutton to the right of either of the two options.











3/29/25, 8:43 AM 8.4. Hue Chroma

8.4. Hue Chroma



8. The "Colors" Menu



8.4. Hue Chroma

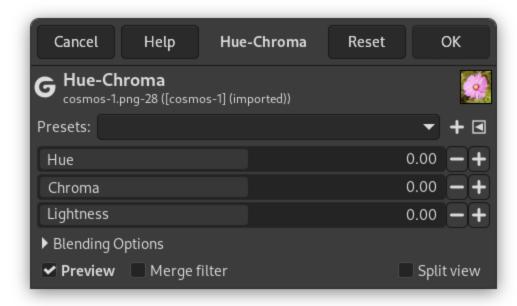
The Hue-Chroma filter is another way to modify saturation. Clear explanations about chroma and saturation can be found at https://ninedegreesbelow.com/photography/changing-saturation-using-lch-chroma.html.

8.4.1. Activating the Command

You can access this command from the main menu through Colors \rightarrow Hue-Chroma....

8.4.2. Options

Figure 16.131. Hue-Chroma Options



Presets

"Presets" are a common feature for several Colors commands. You can find its description in <u>Section 8.1.1, "Colors Common Features"</u>.

Hue

The slider and the small arrow buttons allow you to select a hue in the color wheel (-180°, 180°).

Chroma

"Chroma" is the purity of the color. Moving this slider makes colors more or less pure.

Lightness

This slider and the small arrow buttons allow you to select a value (luminosity): -100, 100.

Blending Options, Preview, Merge filter, Split view

These are common features described in Section 8.1.1, "Colors Common Features".







3/29/25, 8:43 AM 8.4. Hue Chroma

8.3. Color Temperature

Report a bug in GIMP Report a documentation error

8.5. Hue-Saturation

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8.5. Hue-Saturation



8. The "Colors" Menu



8.5. Hue-Saturation

The Hue-Saturation command is used to adjust hue, saturation and lightness levels on a range of color weights for the selected area or active layer.



Note

This command does not work on Grayscale images. If the image is Grayscale, the menu entry is disabled.

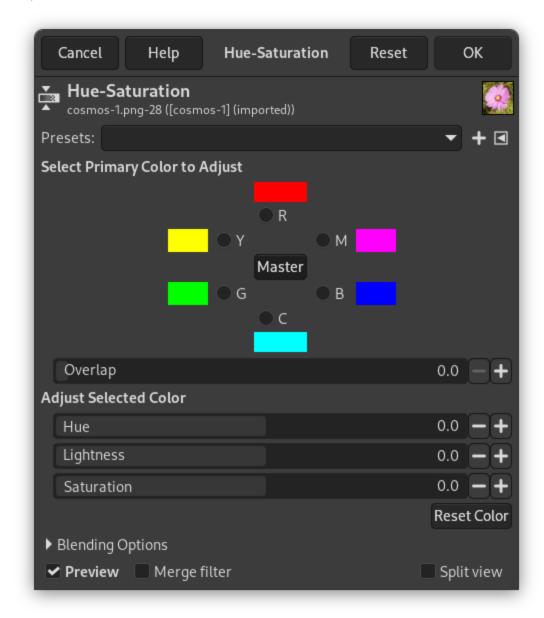
8.5.1. Activating the Command

You can access this command from the main menu through Colors \rightarrow Hue-Saturation....

8.5.2. Options

Figure 16.132. Hue-Saturation Options

3/29/25, 8:43 AM 8.5. Hue-Saturation



Presets

"Presets" are a common feature for several Colors commands. You can find its description in <u>Section 8.1.1, "Colors Common Features"</u>.

Select Primary Color to Adjust

You can choose to adjust any of six colors: the three primary colors (Red, Green and Blue) and the three complementary colors (Cyan, Magenta and Yellow). They are arranged according to the color wheel. When hue increases, hue goes counter-clockwise. When it decreases, it goes clockwise. If you click the Master button, changes you make affect all colors. GIMP default is to set Red as 0. Note that these colors refer to color ranges and not to color channels.

Hue changes are shown in color swatches and the result is visible in the image if the Preview option is enabled.

Overlap

This slider lets you set how much color ranges overlap. This effect is very subtle and works on closely-related colors only:

Figure 16.133. Example for the Overlap option



Original image. From the left to the right: a reddish yellow (255;240;0); a pure yellow (255;255;0); a greenish yellow (240;255;0).

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Overlap = 100. Hue = 15. Colors become (192;255;1), (168;255;1), (162;255;1). Because of overlap, greenish is less green and reddish is less red.

Adjust Selected Color

Hue: The slider and the input box allow you to select a hue in the color wheel (-180, 180).

Lightness: The slider and the input box allow you to select a value (luminosity): -100, 100.



Note

Lightness changes here concern a color range, while they concern a color tone with Curves and Levels tools, which work on color channels. If you change the Yellow lightness with Hue-Saturation, all yellow pixels will be changed, while only dark, bright or medium pixels luminosity will be changed with Curves or Levels tools.

• Saturation: The slider and the input box allow you to select a saturation: -100, 100.

The Reset Color button resets the changes you made to the hue, lightness and saturation of the selected color.

Blending Options, Preview, Merge filter, Split view

These are common features described in Section 8.1.1, "Colors Common Features".







8.4. Hue Chroma



8.6. Saturation

3/29/25, 8:43 AM 8.6. Saturation

8.6. Saturation



8. The "Colors" Menu



8.6. Saturation

Another way to modify saturation. Clear explanations about chroma and saturation can be found at https://ninedegreesbelow.com/photography/changing-saturation-using-lch-chroma.html



Note

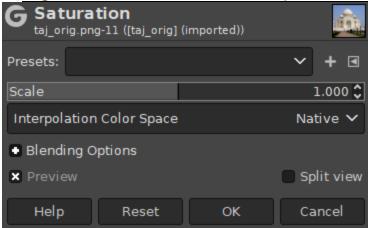
This command does not work on Grayscale images. If the image is Grayscale, the menu entry is disabled.

8.6.1. Activating the Command

You can access this command from the main menu through Colors → Saturation....

8.6.2. Options

Figure 16.134. Saturation Options



Presets

"Presets" are a common feature for several Colors commands. You can find its description in <u>Section 8.1.1, "Colors Common Features"</u>.

Scale

This option gives more or less saturation.

Interpolation Color Space

This option determines in which color space the saturation computations are done. You can choose from Native, which means the color space of the image (default), CIE LAB/Lch, and CIE Yuv.

Blending Options, Preview, Merge filter, Split view

These are common features described in Section 8.1.1, "Colors Common Features".











3/29/25, 8:44 AM 8.7. Exposure

8.7. Exposure



8. The "Colors" Menu



8.7. Exposure

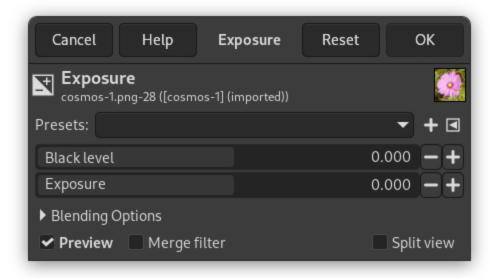
This filter is used for lightning shadows and midtones of an image without blowing the highlights. A detailed tutorial can be found at <u>Appendix C</u>, <u>Tone Mapping and Shadow Recovery Using GIMP's Colors</u> — <u>Exposure</u>....

8.7.1. Activating the Command

You can access this command from the main menu through Colors → Exposure....

8.7.2. Options

Figure 16.135. Exposure Options



Presets

"Presets" are a common feature for several Colors commands. You can find its description in <u>Section 8.1.1, "Colors Common Features"</u>.

Black level

This option is used to dispense with "useless" shadows and highlight information.

Exposure

This option is used to add one or more stops of exposure compensation to the image.

Blending Options, Preview, Merge filter, Split view

These are common features described in <u>Section 8.1.1, "Colors Common Features"</u>.



8.8. Shadows-Highlights







8.8. Shadows-Highlights

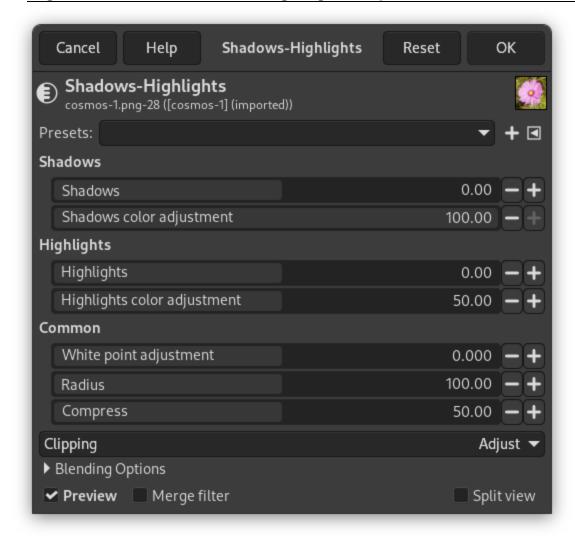
This filter allows adjusting shadows and highlights in the image separately. The implementation closely follow its counterpart in the Darktable photography software Shadows and Highlights.

8.8.1. Activating the Command

You can access this command from the main menu through Colors → Shadows-Highlights....

8.8.2. Options

Figure 16.136. Shadows-Highlights Options



Presets

"Presets" are a common feature for several Colors commands. You can find its description in <u>Section 8.1.1, "Colors Common Features"</u>.

Three options groups:

Shadows: options for shadows:

- Shadows: This slider controls the effect on shadows; positive values lighten shadows while negative values darken them.
- Shadows color adjustment: This slider controls the color saturation adjustment made to shadows; high values cause saturation enhancements on lightened shadows; low values cause desaturation on lightened shadows. It is normally safe to leave this at its default of 100%. This gives a natural saturation boost on shadows—similar to the one you would also expect in nature if shadows received more light.

Highlights: options for highlights:

- Highlights: This slider controls the effect on highlights; negative values darken highlights while positive values lighten them.
- Highlights color adjustment: This slider controls the color saturation adjustment made to highlights; high values cause saturation enhancements on darkened highlights; low values cause desaturation on darkened highlights. Often highlights do not contain enough color information to give convincing colors when darkened. You might need to play a bit with this parameter in order to find the best fitting value depending on your specific image; but be aware that sometimes results still might not be fully satisfying.

Common: options common to shadows and highlights:

- White point adjustment: By default the algorithm of this module leaves black point and white point untouched. In some cases an image might contain tonal variations beyond the white point, i.e. above a luminance value of 100. A negative shift in the white point adjustment slider allows to bring these values down into the proper range so that further details in the highlights get visible.
- Radius: This slider controls the radius of the involved blurring filter. Higher values give softer transitions between shadows and highlights but might introduce halos. Lower values reduce the size of halos but may lead to an artificial look.
- Compress: This slider controls how strong the effect extends to mid-tones; high values reduce the effect to
 the extreme shadows and highlights; low values cause strong adjustments also to mid-tones. You normally
 only need to touch this parameter if you want to limit the effects to the extreme shadows and highlights;
 increase the value in this case. At 100% this module has no visible effect any longer as only absolute black
 and absolute white are affected.

Blending Options, Preview, Merge filter, Split view

These are common features described in Section 8.1.1, "Colors Common Features".



8.7. Exposure







8.9. Brightness-Contrast



8. The "Colors" Menu



8.9. Brightness-Contrast

The Brightness-Contrast tool adjusts the brightness and contrast levels for the active layer or selection. This tool is easy to use, but relatively unsophisticated. The Levels and Curve tools allow you to make the same types of adjustments, but also give you the ability to treat bright colors differently from darker colors. Generally speaking, the Brightness-Contrast tool is great for doing a "quick and dirty" adjustment in a few seconds, but if the image is important and you want it to look as good as possible, you will want to use one of the other tools.



Tip

Besides using the sliders you can also adjust the settings by clicking the mouse inside the image, and dragging while keeping the left mouse button down. Moving the mouse vertically changes the brightness; moving horizontally changes the contrast. When you are satisfied with the result, you can either press the OK button on the dialog, or press the Return key on your keyboard.

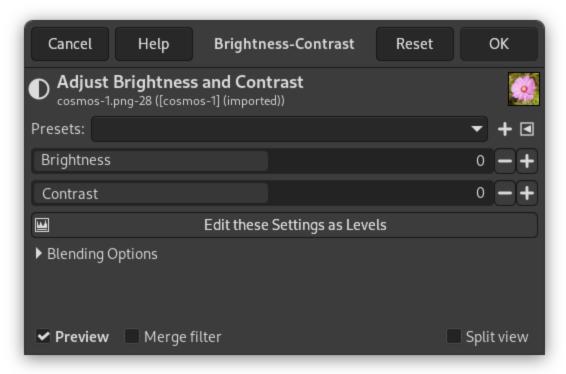
8.9.1. Activating the Tool

There are different possibilities to activate the tool:

- From the main menu: Colors → Brightness-Contrast....
- By clicking the tool icon in the Toolbox if this tool has been installed there. For this, please refer to Section 6.13, "Toolbox".

8.9.2. **Options**

Figure 16.137. Brightness-Contrast options dialog



Presets

"Presets" are a common feature for several Colors commands. You can find its description in <u>Section 8.1.1, "Colors Common Features"</u>.

Brightness

This slider sets a negative (to darken) or positive (to brighten) value for the brightness, decreasing or increasing bright tones.

Contrast

This slider sets a negative (to decrease) or positive (to increase) value for the contrast.

Edit these settings as Levels

To make your work easier, this button lets you turn to the <u>Levels</u> tool with the same settings.

Blending Options, Preview, Merge filter, Split view

These are common features described in <u>Section 8.1.1, "Colors Common Features"</u>.







8.8. Shadows-Highlights



8.10. Levels

8.10. Levels



8. The "Colors" Menu



8.10. Levels

The Level tool provides features similar to the <u>Histogram</u> dialog but can also change the intensity range of the active layer or selection in every channel. This tool is used to make an image lighter or darker, to change contrast or to correct a predominant color cast.

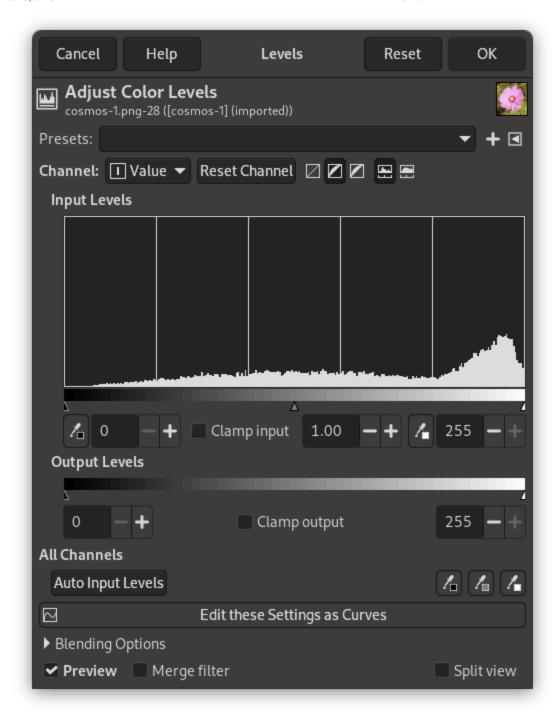
8.10.1. Activating the Tool

There are different possibilities to activate the tool:

- From the main menu: Colors → Levels....
- By clicking the tool icon in the Toolbox if this tool has been installed there. For this, please refer to Section 6.13, "Toolbox".

8.10.2. Options

Figure 16.138. Level tool options



Presets

"Presets" are a common feature for several Colors commands. You can find its description in <u>Section 8.1.1, "Colors Common Features"</u>.

Channel

You can select the specific channel which will be modified by the tool:

- Value makes changes to the value of all RGB channels in the image: the image becomes darker or lighter.
- Red, Green and Blue work on a particular color channel: the image gets more or less color. Remember that adding or removing a color results in removing or adding the complementary color.
- Alpha works on semi-transparent layers or selections: here, dark means more transparency, and white is fully opaque. Your image must have an Alpha Channel, otherwise this option is disabled.
- Reset channel restores the original setting for the selected channel.

☐ Linear , ☐ Non-Linear , ☐ Perceptual

These three buttons determine whether the tone reproduction (TRC) will be displayed using a linear, non-linear, or perceptual X axis.

Linear histogram , EL Logarithmic histogram

These two buttons determine whether the histogram will be displayed using a linear or logarithmic Y axis. For images taken from photographs, the linear mode is most commonly useful. For images that contain substantial areas of constant color, though, a linear histogram will often be dominated by a single bar, and a logarithmic histogram will often be more useful.

Input Levels

The main area is a graphic representation of the active layer or selection dark (Shadows), mid and light (Highlight) tones content (the Histogram). They are on the abscissa from level 0 (black) to level 255 (white). Pixel number for a level is on the ordinate axis. The curve surface represents all the pixels of the image for the selected channel. A well balanced image is an image with levels (tones) distributed all over the whole range. An image with a blue predominant color, for example, will produce a histogram shifted to the left in Green and Red channels, signified by green and red lacking on highlights.

Level ranges can be modified in three ways:

- Three triangles as sliders: one black for dark tones (Shadows), one gray for midtones (Gamma), one white for light (Highlights) tones.
 - The black slider determines the *black point*: all pixels with this value or less will be black (no color with a color channel selected / transparent with the Alpha channel selected).
 - The white slider determines the *white point*: all pixels with this value or higher, will be white (fully colored with a color channel selected / fully opaque with the Alpha channel selected).
 - The gray slider determines the *mid point*. Going to the left, to the black, makes the image lighter (more colored / more opaque). Going to the right, to the white, makes the image darker (less colored / more transparent).
- Two eye-droppers: when you click them, the mouse pointer becomes an eye-dropper. Then clicking on the image determines the black or the white point according to the chosen eye-dropper. Use the left, dark one to determine the black-point; use the right, white one to determine the white point.
- Three numeric text boxes to enter values directly.

Input Levels are used to lighten highlights (bright tones), darken shadows (dark tones), change the balance of bright and dark tones. Move sliders to the left to increase lightness (increase the chosen color / increase opacity). Move the sliders to the right to lessen lightness (lessen the chosen color / lessen opacity).

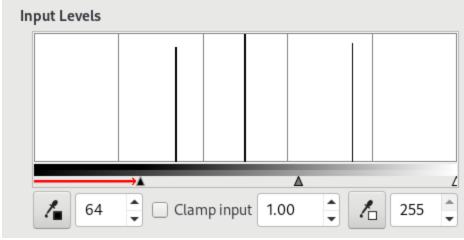
Examples for Input Levels

The original image is a grayscale image with three stripes: Shadows (64), Mid Tones (127), Highlights (192). The histogram shows three peaks, one for each of the three tones.



Original image

1. The Value channel is selected. The black slider (Shadows) has been moved up to the Shadows peak. The 64 value became 0 and the Shadows stripe became black (0). The Gamma (mid tones) slider is automatically moved to the middle of the tone range. Mid tones are made darker to 84 and Highlights to 171.

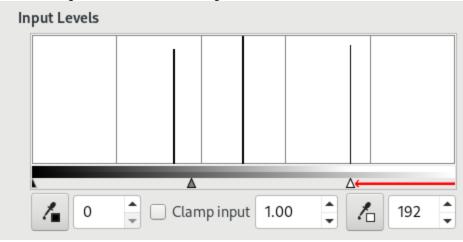


Black slider has been moved



Resulting image

2. The white slider (highlights) has been moved up to the highlight peak. The 192 value became 255 and the highlight stripe became white. The Gamma (mid tones) slider is automatically moved to the middle of the tone range. Mid tones are made lighter to 169 and Shadows to 84.



White slider has been moved



Resulting image

Output Levels

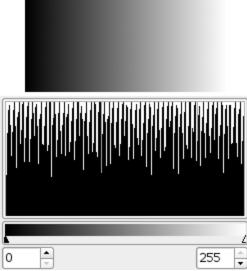
Output levels allow manual selection of a constrained output level range. There are also numeric text boxes with arrowheads located here that can be used to interactively change the Output Levels.

Output levels force the tone range to fit the new limits you have set.

- Working with Value: values are compressed and look more alike; so contrast is reduced. Shadows are made lighter: new details can show up but contrast is less; a compromise is necessary. Highlights are made darker.
- Working with Color channels: if you the use the green channel for example and set the output levels between 100 and 140, all pixels with some green, even a low value, will have their green channel value shifted between 100 and 140.
- Working with Alpha channel: all Alpha values are shifted to the range you have set.

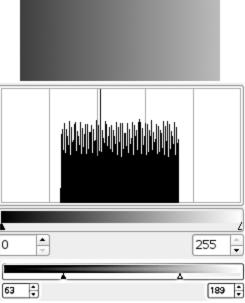
Example for Output Levels

The original image is a RGB gradient from black (0;0;0) to white (255;255;255). Output Levels has no histogram; here, we used Windows → Dockable Dialogs → Histogram.



Original image (a gradient)

2. Value channel selected. The black slider has been moved to 63 and the white slider to 189. The Histogram shows the compression of pixels. No pixel is less than 63, and no pixel is more than 189. In the image, Shadows are lighter and Highlights are darker: contrast is reduced.



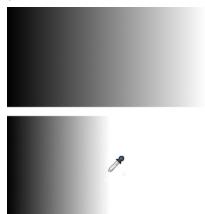
Black slider has been moved

All Channels

Auto: Performs an automatic setting of the levels.

Three eyedroppers , . These three buttons respectively represent a white, a gray and a black eyedropper. When you click one of these buttons, the mouse pointer takes the form of the eye-dropper it represents. Then, when clicking the image, the clicked pixel determines the *white point*, the *black point* or the *mid point* according to the eye-dropper you chose. Works on all channels, even if a particular channel is selected.

Figure 16.139. Example for Levels eye-droppers



Above is original gradient from black to white. Below is the result after clicking with the white eye-dropper: all pixels with a value higher than that of the clicked pixel turned to white.

Edit these settings as Curves

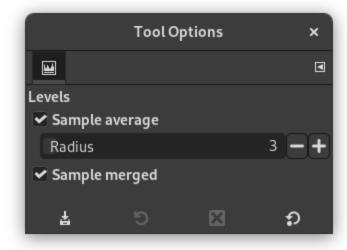
To make your work easier, this button lets you turn to the <u>Curves</u> tool with the same settings.

Blending Options, Preview, Merge filter, Split view

These are common features described in Section 8.1.1, "Colors Common Features".

8.10.3. Tool Options dialog

Figure 16.140. "Levels" tool options



Although this tool is not present in the Toolbox by default (please refer to <u>Section 6.13, "Toolbox"</u> if you want to add it), nevertheless it has a Tool Option Dialog under the Toolbox.

Sample Average

This slider sets the "radius" of the color-picking area to get the averaged color value from nearby pixels. This area appears as a more or less enlarged square when you maintain the click on a pixel.

Sample merged

If you enable this option, sampling is not calculated only from the values of the active layer, but from all visible layers.

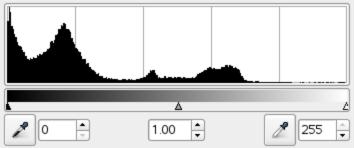
For more information, see the Glossary entry.

8.10.4. Actual practice

Figure 16.141. A very under-exposed image



Original image

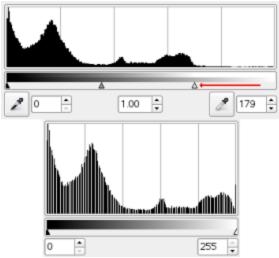


The histogram shows a predominance of Shadows and missing Highlights.





The white slider has been moved to the start of well marked Highlights. The image lightens up.

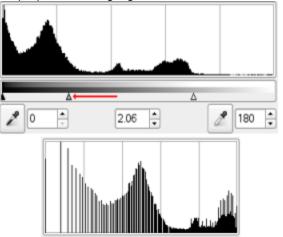


The resulting histogram (down) shows Highlights now, but Shadows are still predominant.

Figure 16.143. Setting the balance between Shadows and Highlights



The mid slider has been moved to the left. This results in reducing the proportion of Shadows and increasing the proportion of Highlights.



The resulting histogram (down) confirms the reduction of Shadows.







8.9. Brightness-Contrast

4

Report a bug in GIMP Report a documentation error

8.11. Curves

8.11. Curves



8. The "Colors" Menu



8.11. Curves

The Curves tool is the most sophisticated tool for changing the color, brightness, contrast or transparency of the active layer or a selection. While the Levels tool allows you to work on Shadows and Highlights, the Curves tool allows you to work on any tonal range. It works on RGB images.

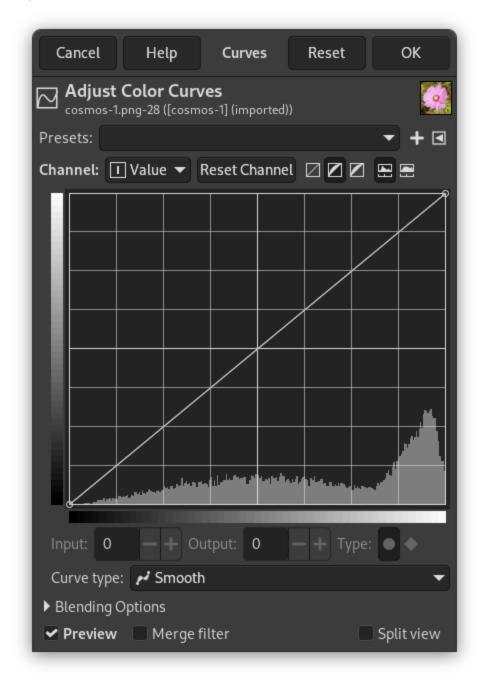
8.11.1. Activating the Tool

There are different possibilities to activate the tool:

- From the main menu: Colors → Curves....
- By clicking the tool icon in the Toolbox if this tool has been installed there. For this, please refer to Section 6.13, "Toolbox".

8.11.2. "Curves" options

Figure 16.144. The "Curves" dialog



Presets

"Presets" are a common feature for several Colors commands. You can find its description in <u>Section 8.1.1, "Colors Common Features"</u>.

Channel

There are five options:

Value

The curve represents the Value, i.e. the brightness of pixels as you can see them in the composite image.

Red, Green, Blue

The curve represents the quantity of color in each of the three RGB channels. Here, *dark* means *little* of the color. *Light* means *a lot* of the color.

Alpha

The curve represents the opacity of the pixels. *Dark* means *very transparent*. *Light* means *very opaque*. Your image or active layer must have an Alpha channel for this option to be enabled.

Reset Channel

This button deletes all changes made to the selected channel and returns to default values.

☐ Linear , ☐ Non-Linear , ☐ Perceptual

These three buttons determine whether the tone reproduction (TRC) will be displayed using a linear, non-linear, or perceptual X axis.

Linear histogram ,
 □ Logarithmic histogram

These two buttons determine whether the histogram will be displayed using a linear or logarithmic Y axis. For images taken from photographs, the linear mode is most commonly useful. For images that contain substantial areas of constant color, though, a linear histogram will often be dominated by a single bar, and a logarithmic histogram will often be more useful.

You can also use the same options in the Tool Options dialog if Curves has been enabled as a tool. This grayed out histogram is not displayed by default.

Main Editing Area

- **The horizontal gradient**: it represents the *input* tonal scale. It, too, ranges from 0 (black) to 255 (white), from Shadows to Highlights. When you adjust the curve, it splits into two parts; the upper part then represents the *tonal balance* of the layer or selection.
- **The vertical gradient**: it represents the destination, the *output* tonal scale. It ranges from 0 (black) to 255 (white), from Shadows to Highlights.
- **The chart**: the curve is drawn on a grid and goes from the bottom left corner to the top right corner. The *pointer x/y position* is permanently displayed in the top left part of the grid. By default, this curve is straight, because every input level corresponds to the same output tone. GIMP automatically places a point at both ends of the curve, for black (0) and white (255).

If you click the curve, a new *point* is created. When the mouse pointer goes over a point, it takes the form of a small hand. You can click-and-drag the point to bend the curve.

If you click outside the curve, a point is also created, and the curve includes it automatically. If you click outside the curve, the Y-coordinate snaps to the original curve: this is particularly useful for adding points along the curve.

Inactive points are white. The active point is black. You can activate a point by clicking it. You can also swap the point activation by using the Left and Right arrow keys of your keyboard.

Two points define a *curve segment* which represents a tonal range in the layer. You can click-and-drag this segment (this creates a new point). Of course, you can't drag it beyond the end points.

To *move a point*, there are several possibilities to fine tune the point position:

- Click-and-drag the point.
- Using Up and Down arrow keys (Holding the **Shift** down lets you move it by increments of 15 pixels) to move the point vertically.
- **Ctrl** + click-and-drag allows you to move the point along the curve in its segment, independently of the pointer position.
- Another way to move point is using the "Input" and "Output" spin buttons: see below.

To *delete* all points (apart from both ends that can't be deleted), click the Reset Channel button. To delete only one point, move it beyond any adjacent point horizontally.

Meanwhile, on the canvas, the mouse pointer has the form of an eye-dropper. If you click a pixel, a vertical line appears on the chart, positioned to the source value of this pixel in the selected channel. If you Shift click, you create a point in the selected channel. If you Ctrl click, you create a point in all channels, possibly including the Alpha channel. You can also Shift drag and Ctrl change: this moves the vertical line and the point appears when releasing the mouse left button.

The *histogram* of the active layer or selection for the selected channel is represented in gray in the chart. It's only a reference and is not updated during treatment.

Input, Output

These spin buttons allow setting the selected point coordinates numerically and accurately if needed.

Type

Control points can be either Smooth (default: all points are smooth) or Corner points. These Corner points result in a sharp angle. They are displayed using a diamond shape. You can toggle between Smooth and Corner for the selected point.

Curve type

Smooth

This Smooth option affects the whole curve, not only the selected point as above.

Free Hand

With this mode, you can draw a free hand line that you can smooth by clicking the Smooth Curve type.

Blending Options, Preview, Merge filter, Split view

These are common features described in <u>Section 8.1.1, "Colors Common Features"</u>.

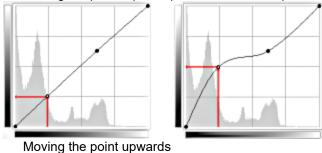
8.11.3. Using "Curves"

8.11.3.1. Summary and basic shapes

We create points and segments on the curve and we move them to shape the curve. This curve maps "input" tones of the active layer or selection to "output" tones.

How the Curves tool works

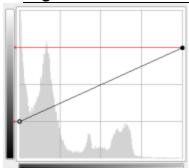
Moving the point a pixel upwards makes this pixel brighter.



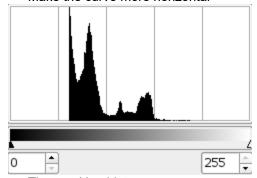
Making the curve more horizontal

Making the curve more horizontal forces all the input tonal range to occupy a shrunk output tonal range. The histogram shows the compression of pixels into the output range. Darkest and brightest pixels disappeared: contrast decreases.

Figure 16.145. Making the curve more horizontal



Make the curve more horizontal



The resulting histogram

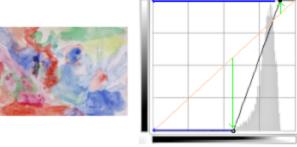
Making the curve more vertical

Moving the upper end point to the left and the lower end point to the right is the same as moving the white slider to the left and the black slider to the right in the Levels tool: all pixels whose value is more than the white point (the flat part of the curve) are made white (more colored / more opaque according to the selected channel). All pixels whose value is

less than the black point (the lower flattened curve) are made black (black / completely transparent). Pixels corresponding to points of the curve that have moved up are made lighter. Pixels corresponding to points of the curve that have moved down are made darker (green arrows). All these pixels will be extended to the whole output tonal range.

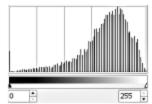
The histogram shows the extension of values, from black (0) to White (255): contrast is increased. Since the Value channel is selected, changes affect all color channels and colors increase.

Figure 16.146. Making the curve more vertical



Make the curve more vertical

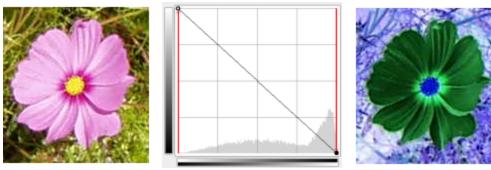




Result and its histogram

8.11.3.2. Practical cases

Invert colors

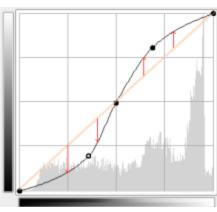


Inverted curve

Black is made White (fully colored / fully opaque). White is made black (black, fully transparent). All pixels adopt the complementary color. Why that? Because subtracting the channel values from 255 gives the complementary color. For example: 19;197;248 a sky blue gives 255-19; 255-197; 255-248 = 236;58;7, a bright red.

Enhance contrast



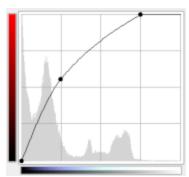


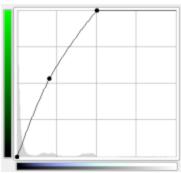


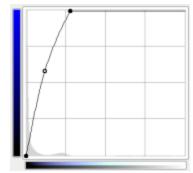
Contrast enhanced

Contrast is increased in mid tones because the curve is steeper there. Highlights and Shadows are increased but contrast is slightly less in these areas because the curve is flatter.

Working on color channels







For every channel, we moved the white point horizontally to the left, to the first Highlights. This lightens Highlights up. Then we shaped the curve to lighten Mid tones and Shadows while keeping black.









8.10. Levels



4



8.12. Invert

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8.12. Invert



8. The "Colors" Menu



8.12. Invert

The Invert command inverts all the pixel colors and brightness values in the current layer, as if the image were converted into a negative. Dark areas become bright and bright areas become dark. Hues are replaced by their complementary colors. For more information about colors, see the Glossary entry about <u>Color Model</u>.



Warning

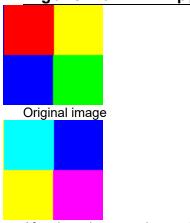
Do not confuse this command with the **Invert Selection** command.

8.12.1. Activating the Command

You can access this command from the main menu through Colors \rightarrow Invert.

8.12.2. Example

Figure 16.147. Applying "Invert colors"



After the colors were inverted











8.13. Linear Invert

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8.13. Linear Invert



8. The "Colors" Menu



8.13. Linear Invert

The Linear Invert command inverts all the color components except the alpha channel in the current layer in linear light. Dark areas become bright and bright areas become dark.



Warning

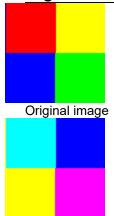
Do not confuse this command with the Invert Selection command.

8.13.1. Activating the Command

You can access this command from the main menu through Colors → Linear Invert.

8.13.2. Example

Figure 16.148. Applying "Linear Invert colors"



After inverting the colors in linear light











8.14. Value Invert

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8.14. Value Invert





8.14. Value Invert

8.14.1. Overview

Figure 16.149. Example for the "Value invert" filter



Original image



"Value Invert" applied

This filter inverts Value (luminosity) of the active layer or selection. Hue and Saturation will not be affected, although the color will sometimes be slightly different because of round-off error. If you want to invert Hue and Saturation also, use Colors \rightarrow Invert.

Note that hue and saturation can be distorted quite a bit when applying twice this filter for colors with a high luminosity (for instance, HSV 102°,100%, 98%, a bright green, gives HSV 96°, 100%, 2% after a first application of the filter, and

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96°, 100%, 98% after a second application). Thus, you should not expect to be able to apply this filter twice in a row and get back the image you started with.

Figure 16.150. Example of using this filter twice



Original image



First application of the filter



Second application: the image is not exactly the same as the original one.

8.14.2. Activating the Filter

This filter is found in the main menu under Colors \rightarrow Value Invert.









8.13. Linear Invert



8.15. The "Auto" Submenu

8.15. The "Auto" Submenu







8.15. The "Auto" Submenu

The Auto submenu contains operations which automatically adjust the distribution of colors in the active layer, without requiring any input from the user. Several of these operations are actually implemented as plug-ins.

- Section 8.16, "Equalize"
- Section 8.17, "White Balance"
- Section 8.18, "Stretch Contrast"
- Section 8.19, "Stretch Contrast HSV"
- Section 8.20, "Color Enhance"

8.15.1. Activating the Submenu

You can access this submenu from the image window through Colors → Auto.

8.15.2. Automatic Color-Stretching

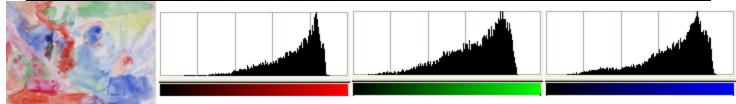
GIMP has several automatic commands for stretching the columns of the histogram for the color channels of the active layer. By pushing bright pixels to the right and dark pixels to the left, they make bright pixels brighter and dark pixels darker, which enhances the contrast in the layer.

Some of the commands stretch the three color channels equally, so that the hues are not changed. Other commands stretch each of the color channels separately, which changes the hues.

The way the stretching is done varies with the different commands and the results look different. It is not easy to predict exactly what each command will do. If you know exactly what you are doing, you can get the same results, and even more, with the Levels tool.

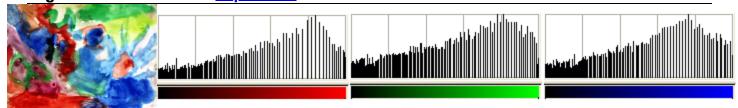
Here are examples of the results of these commands, all together on one page, so you can compare them more easily. The most appropriate command depends upon your image, so you should try each of them to see which command works best on it.

Figure 16.151. The original layer and its histograms



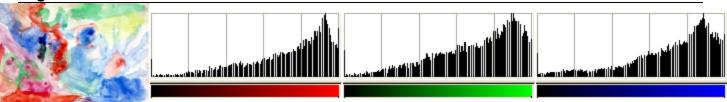
This layer doesn't have any very bright or very dark pixels, so it works well with these commands.

Figure 16.152. The Equalize command



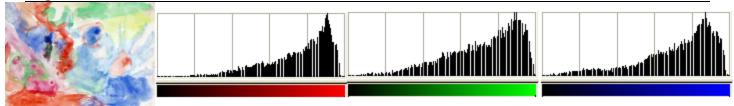
"Equalize" example

Figure 16.153. The White Balance command



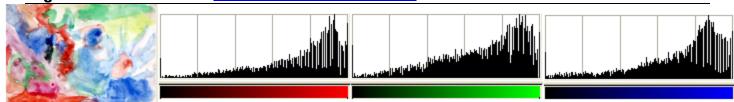
"White Balance" example

Figure 16.154. The Stretch Contrast command



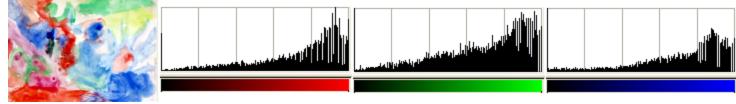
"Stretch Contrast" example

Figure 16.155. The Stretch Contrast HSV command



"Stretch Contrast HSV" example

Figure 16.156. The Color Enhance command



"Color Enhance" example



8.14. Value Invert





8.16. Equalize

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8.16. Equalize



8. The "Colors" Menu



8.16. Equalize

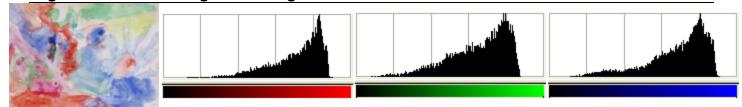
The Equalize command automatically adjusts the brightness of colors across the active layer so that the histogram for the Value channel is as nearly flat as possible, that is, so that each possible brightness value appears at about the same number of pixels as every other value. You can see this in the histograms in the example below, in that pixel colors which occur frequently in the image are stretched further apart than pixel colors which occur only rarely. The results of this command can vary quite a bit. Sometimes "Equalize" works very well to enhance the contrast in an image, bringing out details which were hard to see before. Other times, the results look very bad. It is a very powerful operation and it is worth trying to see if it will improve your image. It works on layers from RGB and Grayscale images. If the image is Indexed, the menu entry is disabled.

8.16.1. Activating the Command

You can access this command from the main menu through Colors → Auto → Equalize.

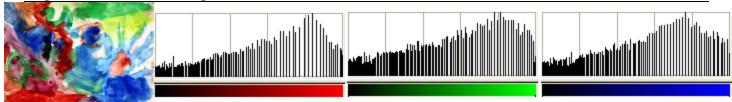
8.16.2. "Equalize" example

Figure 16.157. Original image



The active layer and its Red, Green, Blue histograms before "Equalize".

Figure 16.158. Image after the command



The active layer and its Red, Green, Blue histograms after treatment.

Histogram stretching creates gaps between pixel columns giving it a striped look: colors that occur frequently are stretched.



8.15. The "Auto" Submenu







8.17. White Balance

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8.17. White Balance



8. The "Colors" Menu



8.17. White Balance

The White Balance command automatically adjusts the colors of the active layer by stretching the Red, Green and Blue channels separately. To do this, it discards pixel colors at each end of the Red, Green and Blue histograms which are used by only 0.05% of the pixels in the image and stretches the remaining range as much as possible. The result is that pixel colors which occur very infrequently at the outer edges of the histograms (perhaps bits of dust, etc.) do not negatively influence the minimum and maximum values used for stretching the histograms, in comparison with Stretch Contrast", however, there may be hue shifts in the resulting image.

This command suits images with poor white or black. Since it tends to create pure white (and black), it may be useful e.g. to enhance photographs.



Note

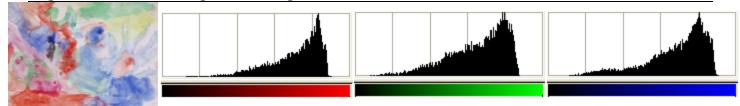
This command only works on RGB images. If the image is Grayscale or Indexed, the menu entry is disabled.

8.17.1. Activating the Command

You can access this command from the main menu through Colors → Auto → White Balance.

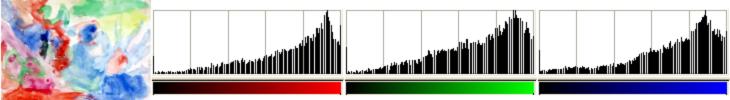
8.17.2. "White Balance" example

Figure 16.159. Original image



The active layer and its Red, Green and Blue histograms before "White Balance".

Figure 16.160. Image after the command



The active layer and its Red, Green and Blue histograms after "White Balance". Poor white areas in the image became pure white.

Histogram stretching creates gaps between the pixel columns, giving it a striped look.







8.18. Stretch Contrast



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8.18. Stretch Contrast



8. The "Colors" Menu



8.18. Stretch Contrast

The Stretch Contrast command automatically stretches the histogram values in the active layer. For each channel of the active layer, it finds the minimum and maximum values and uses them to stretch the Red, Green and Blue histograms to the full contrast range. The bright colors become brighter and the dark colors become darker, which increases the contrast. "Stretch Contrast" works on layers of RGB, Grayscale and Indexed images. Use "Stretch Contrast" only if you want to remove an undesirable color tint from an image which should contain pure white and pure black

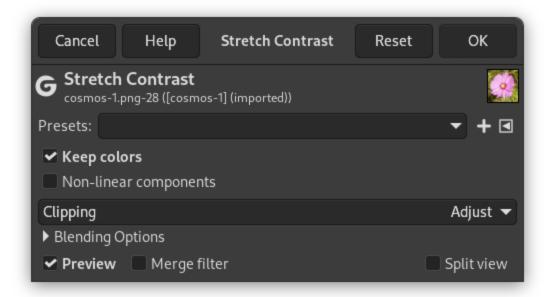
This command is also similar to the <u>Color Balance</u> command, but it does not reject any of the very dark or very bright pixels, so the white might be impure.

8.18.1. Activating the Command

You can access this command from the main menu through Colors → Auto → Stretch Contrast.

8.18.2. Options

Figure 16.161. "Stretch Contrast" settings



Presets

"Presets" are a common feature for several Colors commands. You can find its description in <u>Section 8.1.1, "Colors Common Features"</u>.

Keep Colors

Impact each color channel with the same amount.

Non-Linear Components

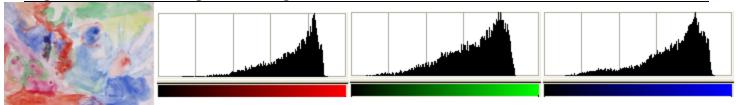
When set, this option operates on gamma corrected values instead of linear RGB.

Blending Options, Preview, Merge filter, Split view

These are common features described in Section 8.1.1, "Colors Common Features".

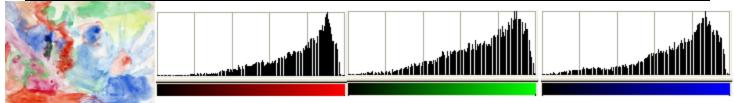
8.18.3. "Stretch Contrast" Example

Figure 16.162. Original image



The layer and its Red, Green and Blue histograms before "Stretch Contrast".

Figure 16.163. Image after the command



The layer and its Red and Green and Blue histograms after "Stretch Contrast". The pixel columns do not reach the right end of the histogram (255) because of a few very bright pixels, unlike "White Balance". Histogram stretching creates gaps between the pixel columns, giving it a striped look.



8.17. White Balance



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8.19. Stretch Contrast HSV



8. The "Colors" Menu



8.19. Stretch Contrast HSV

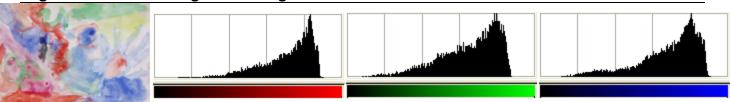
The Stretch Contrast HSV command does the same thing as the <u>Stretch Contrast</u> command, except that it works in HSV color space, rather than RGB color space, and it preserves the Hue. Thus, it independently stretches the ranges of the Hue, Saturation and Value components of the colors. Occasionally the results are good, often they are a bit odd. "Stretch Contrast HSV" operates on layers from RGB and Indexed images. If the image is Grayscale, the menu entry is disabled.

8.19.1. Activating the Command

You can access this command from the main menu through Colors → Auto → Stretch Contrast HSV.

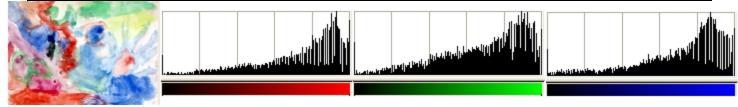
8.19.2. "Stretch Contrast HSV" example

Figure 16.164. Original image



The active layer and its Red, Green and Blue histograms before "Stretch Contrast HSV".

Figure 16.165. Image after the command



The active layer and its Red, Green and Blue histograms after "Stretch Contrast HSV". Contrast, luminosity and hues are enhanced.









8.18. Stretch Contrast



8.20. Color Enhance

3/29/25, 8:49 AM 8.20. Color Enhance

8.20. Color Enhance



8. The "Colors" Menu



8.20. Color Enhance

The Color Enhance command stretches the Chroma range of the colors in the layer to the maximum possible, without altering Hue and Lightness. It does this by converting the colors to <u>CIE LCh space</u>, then stretching the Chroma range to be as large as possible, and finally converting the colors back to its native color space.



Note

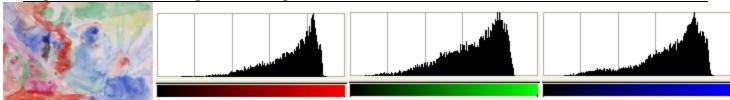
This command does not work on Grayscale images. If the image is Grayscale, the menu entry is disabled.

8.20.1. Activating the Command

You can access this command from the main menu through Colors → Auto → Color Enhance.

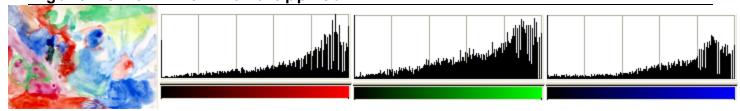
8.20.2. "Color Enhance" example

Figure 16.166. Original image



The active layer and its Red, Green and Blue histograms before "Color Enhance".

Figure 16.167. Command applied



The active layer and its Red, Green and Blue histograms after "Color Enhance". The result may not always be what you expect.







8.21. The "Components" Submenu

8.21. The "Components" Submenu



8. The "Colors" Menu



8.21. The "Components" Submenu

The Components submenu contains operations which work on individual color components or where you can combine or separate these components.

- Section 8.22, "Channel Mixer"
- Section 8.23, "Extract Component"

- Section 8.24, "Mono Mixer"
 Section 8.25, "Compose"
 Section 8.26, "Decompose"
- Section 8.27, "Recompose"

8.21.1. Activating the Command

You can access this command from the main menu through Colors \rightarrow Components.



8.20. Color Enhance





Report a bug in GIMP Report a documentation error



8.22. Channel Mixer

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8.22. Channel Mixer





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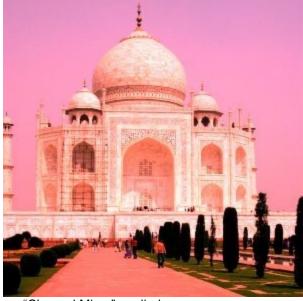
8.22. Channel Mixer

8.22.1. Overview

Figure 16.168. Example for the "Channel Mixer" filter



Original image



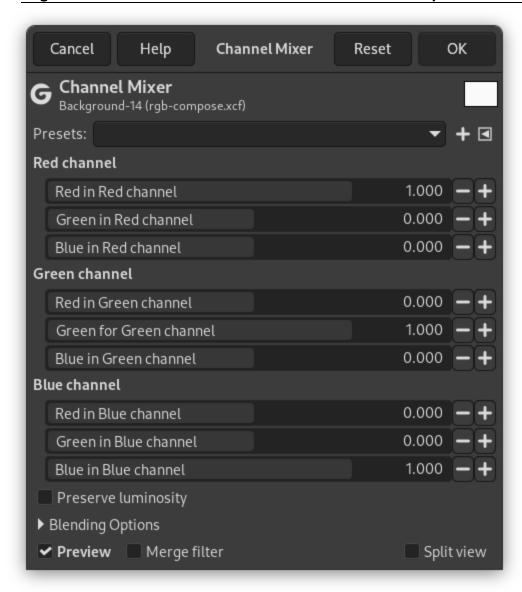
"Channel Mixer" applied

This command combines values of the RGB channels. It works with images with or without an alpha channel.

8.22.2. Activating the Command

8.22.3. Options

Figure 16.169. "Channel Mixer" command options



Presets

"Presets" are a common feature for several Colors commands. You can find its description in <u>Section 8.1.1, "Colors Common Features"</u>.

Red Channel, Green Channel, Blue Channel

Each of these has three sliders, which set the contribution of the red, green and blue input channels in the output channel. The sliders go from -2 to 2. They represent the multiplication factor of the input channel that will be attributed to the output channel.

Preserve luminosity

The mixing can result in an image where some of the colors are too light. This option lessens the luminosity of the color channels while keeping a good visual ratio between them. So, you can change the relative weight of the colors without changing the overall luminosity.

Blending Options, Preview, Merge filter, Split view

These are common features described in Section 8.1.1, "Colors Common Features".

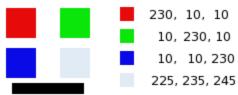
8.22.4. How does Channel Mixer work?

3/29/25, 8:49 AM 8.22. Channel Mixer

Each of the output channels is based on the values you set for the three RGB input channels. By default each output channel is based for 100% on the corresponding input channel. This is the one set to 1.0, and the others are set to 0.0. You can change each of the sliders from -2 to +2.

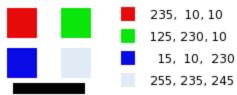
The three RGB input sliders let you give a percentage to every channel. For every pixel in the image, the sum of the calculated values for every channel from these percentages will be given to the output channel. Here is an example:

Figure 16.170. The original image and its channels



RGB values of the pixels in red, green, blue, gray squares are displayed. The black rectangle is special, because black (0;0;0) is not affected by the command (0 multiplied by any percentage always gives 0). The result can't exceed 255 nor be negative.

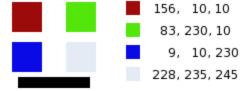
Figure 16.171. Output channel is red. Green Channel +50



In the red square, the pixel values are 230;10;10. Relative values are 1;0.5;0. The calculation result is 230*1 + 10*0,5 + 10*0 = 235. The same reasoning is valid for the green and the blue squares.

In the gray square, which contains red color, the calculation result is above 255. It is reduced to 255. A negative value would be reduced to 0.

Figure 16.172. Output channel is red. Green Channel +50%. The Preserve Luminosity option is checked.



The values attributed to the Red Output channel are lower, preventing a too bright image.



8.21. The "Components" Submenu







8.23. Extract Component

8.23. Extract Component





8.23. Extract Component

8.23.1. Overview

Figure 16.173. Extract Component applied



Original image



Command "Extract Component" applied with default options.

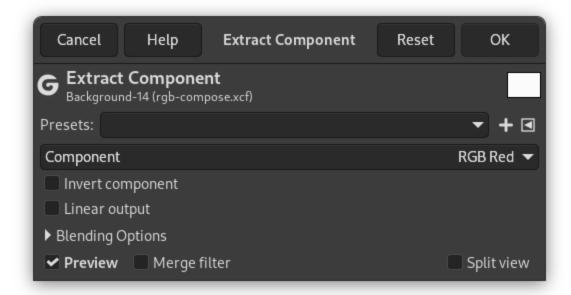
This command allows you to extract one specific color component from the current layer. This will be represented as a grayscale layer. It is similar to Decompose, except that it extracts only one component and the effect is performed on the current layer instead of creating a new image.

8.23.2. Activating the Command

• You can access this command from the main menu through Colors → Components → Extract Component....

8.23.3. Options

Figure 16.174. "Extract Component" command options



Presets

"Presets" are a common feature for several Colors commands. You can find its description in <u>Section 8.1.1, "Colors Common Features"</u>.

Component

Component to extract. Default is RGB Red: all layer pixels that have the red component in their color will be extracted to create gray pixels; gray pixel value is that of the red channel (e.g a 153;70;17 RGB pixel will give a 153;153;153 gray pixel).

Invert component

Invert all pixel values of the extracted component.

Linear output

Use linear output instead of gamma corrected.

Blending Options, Preview, Merge filter, Split view

These are common features described in Section 8.1.1, "Colors Common Features".



3/29/25, 8:50 AM 8.24. Mono Mixer

8.24. Mono Mixer



8. The "Colors" Menu



8.24. Mono Mixer

8.24.1. Overview

Figure 16.175. Mono-mixer applied



Original image



Command "Mono-mixer" applied with default options.



Note

This command does not work on Grayscale images. If the image is Grayscale, the menu entry is disabled.

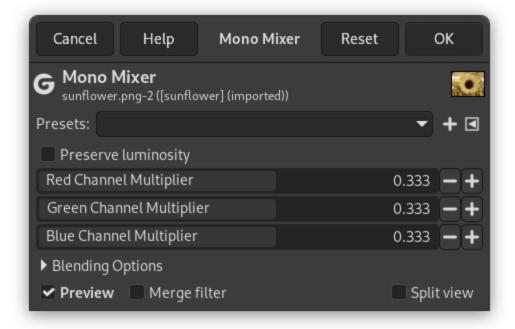
8.24.2. Activating the Command

You can access this command from the main menu through Colors → Components → Mono Mixer....

8.24.3. Options

Figure 16.176. "Mono Mixer" command options

3/29/25, 8:50 AM 8.24. Mono Mixer



Presets

"Presets" are a common feature for several Colors commands. You can find its description in <u>Section 8.1.1, "Colors Common Features"</u>.

Preserve luminosity

The mixing can result in an image where some of the colors are too light. This option lessens the luminosity of the color channels while keeping a good visual ratio between them. So, you can change the relative weight of the colors without changing the overall luminosity.

Red Channel Multiplier, Green Channel Multiplier, Blue Channel Multiplier

Coefficient applied to each channel. Values range from -5.000 to 5.000. As default values are equal in the three channels, image is grayed out.

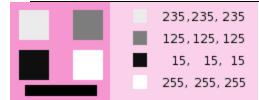
Blending Options, Preview, Merge filter, Split view

These are common features described in Section 8.1.1, "Colors Common Features".

8.24.4. Using Mono Mixer

When this filter is opened, the image preview turns to grayscale, but the image is still a RGB image with three channels, until the OK button is pressed.

Figure 16.177. Red: 100% Green: 50% Blue: 0%. Preserve Luminosity unchecked.



In every square, pixels have been converted into a gray level equal to the value of the Red channel in the original image (The background has been painted with pink afterwards to make all squares visible).

Here is how the Preserve Luminosity works in the monochrome mode: "For example, suppose the sliders were Red:75%, Green:75%, Blue:0%. With Preserve Luminosity disabled, the resulting picture would be at 75%+75%+0% =150%, very bright indeed. A pixel with a value of, say, R,G,B=127,100,80 would map to 127*0.75+100*0.75+80*0=170 for each channel. With Preserve Luminosity enabled, the sliders will be scaled so they always add up to 100%. In this example, that scale value is 1/(75%+75%+0%) or 0.667. So the pixel values would be about 113. The Preserve

3/29/25, 8:50 AM 8.24. Mono Mixer

Luminosity option just assures that the scale values from the sliders always adds up to 100%. Of course, strange things happen when any of the sliders have large negative values." (from the plug-in author himself).



Note

Which channel should you modify? This depends on what you want to do. In principle, the Red channel suits contrast modifications well. The Green channel is well adapted to details changes and the Blue channel to noise, grain changes. You can use the Decompose command.



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8.23. Extract Component



8.25. Compose

3/29/25, 8:50 AM 8.25. Compose

8.25. Compose





8.25. Compose

8.25.1. Overview

Figure 16.178. Example for the "Compose" command







Decomposed image (RGB decomposition)



"Compose" applied

This command constructs an image from several grayscale images or layers, for instance from extracted RGB, HSV, etc. components. You can also build an image from grayscale images or layers created independently.

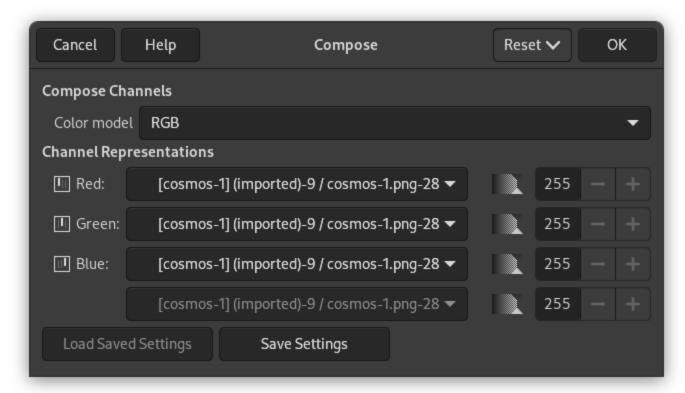
8.25.2. Activating the Command

• You can access this command from the main menu through Colors → Components → Compose.... It is enabled if your image is grayscale.

8.25.3. Options

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Figure 16.179. "Compose" command options



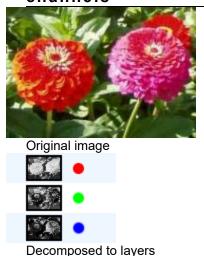
Compose Channels

Here you can select the color space to be used: RGB, HSV, etc. The available options are described in the Decompose command.

Channel Representation

Allows you to select which layer or image will be used for each channel. You may use this option, for example, to exchange color channels:

Figure 16.180. Channel Representation example: exchange two channels



3/29/25, 8:50 AM 8.25. Compose



Composed image after using Channel Representation to switch red and green channels

Mask Value: Instead of selecting a layer or an image to build the channel, you can give the channel a value from 0 to 255. But note that at least one channel must be formed from a layer or image.



Tip

If you use different settings in Compose than when you used Decompose, for instance an image decomposed to <u>RGB</u> then recomposed to <u>LAB</u>, you will get interesting color effects. Test it!



8.24. Mono Mixer



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Report a bug in GIMP Report a documentation error

8.7

8.26. Decompose

3/29/25, 8:50 AM 8.26. Decompose

8.26. Decompose





8.26. Decompose

8.26.1. Overview

Figure 16.181. Decomposition to images (RGB)



Original image







Command "Decompose" applied (RGB decomposition) with Decompose to layers unchecked.

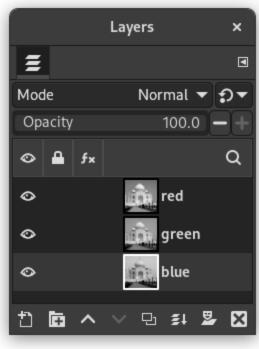
Figure 16.182. Decomposition to layers (RGB)



Original image

3/29/25, 8:50 AM 8.26. Decompose





Command "Decompose" applied (RGB decomposition) with Decompose to layers checked.

This command separates the channels (RGB, HSV, CMYK, etc.) of an image into separated images or layers.



Note

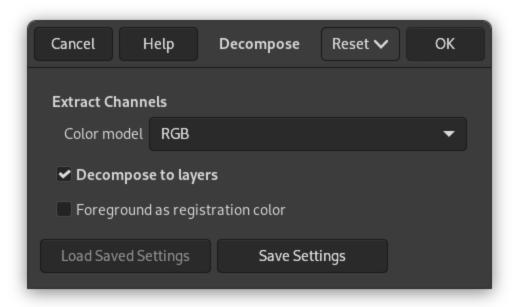
This command only works on RGB images. If the image is Grayscale or Indexed, the menu entry is disabled.

8.26.2. Activating the Command

• You can access this command from the main menu through Colors → Components → Decompose....

8.26.3. Options

Figure 16.183. "Decompose" command options



3/29/25, 8:50 AM 8.26. Decompose

Extract Channels

Following options are described with **Decompose to layers** checked.

Color model

RGB

If the RGB option is chosen, a gray level image is created with three layers (Red, Green and Blue), and two channels (Gray and Alpha).

This function is interesting when using the Threshold tool. You can also perform operations like cutting, pasting or moving selections in a single RGB channel. You can use an extracted grayscale layer as a selection or mask by saving it in a channel (select the whole or a part of the layer, then Select \rightarrow Save to a channel).

RGBA

If the RGBA option is chosen, an image is created similar to the RGB Decomposing with an additional Alpha layer filled with the transparency values of the source image. Fully transparent pixels are black and fully opaque pixels are white.

Alpha

This option extracts the image transparency stored in the Alpha channel in the <u>Channels Dialog</u> in a separate image. The fully transparent pixels are Black the fully opaque pixels are white. The graytones are smooth transitions of the transparency in the source image.

HSV

This option decomposes image into three grayscale layers, one for Hue, one for Saturation and another for Value.

Although Hue is grayscale, it does represent hues. In the color wheel, white and black are starting and arrival points and are superimposed. They represent Red color at top of the wheel. Gray intermediate levels are corresponding to intermediate hues on the wheel: dark gray to orange, mid gray to green and light gray to magenta.

Saturation and Value: White is maximum Saturation (pure color) and maximum Value (very bright). Black is minimum Saturation (white) and minimum Value (black).

HSL

This option is similar to HSV. Instead of the Value, the third layer contains the image's L component.

CMYK

This option decomposes an image into four grayscale layers, one for Yellow, one for Magenta, one for Cyan, and one for Black.

This option can be useful to transfer an image into printing software with CMYK capabilities.

LAB

This option decomposes image into three grayscale layers, layer "L" for Luminance, layer "A" for colors between green and red, layer "B" for colors between blue and yellow.

The LAB Decomposing is a color model of the Luminance-Color family. A channel is used for the Luminosity while two other channels are used for the Colors. The LAB color model is used by Photoshop.

LCH

This option decomposes image into three grayscale layers, layer "L" for Luminance, layer "C" for Chroma, and layer "H" for Hue.

The LCH Decomposing is a color model of the Luminance-Color family.

YCbCr ITU R470, YCbCr ITU R709, YCbCr ITU R470 256, YCbCr ITU R709 256

In GIMP there are four YCbCr decompositions with different values. Each option decomposes an image in three grayscale layers, a layer for Luminance and the other two layers for blueness and redness.

The YCbCr color model, also called YUV, is now used for digital video (initially for PAL analog video). It's based on the idea that the human eye is most sensitive to luminosity, next to colors. The YCbCr Decomposing uses a transformation matrix and the different options are different values recommended by ITU (International Telecommunication Union) applied to the matrix.

Decompose to Layers

If this option is checked, a new grayscale image is created, with each layer representing one of the channels of the selected mode. If this option is unchecked, every channel is represented in its own image and clearly named in the name bar.

Foreground as registration color

Example 16.1. Crop marks

3/29/25, 8:50 AM 8.26. Decompose



Source image



Cyan component



Black component (Magenta and Yellow components omitted.)

This option is for specialists. It is related to CMYK printing. When checked, every pixel of the current foreground color will be black in each component of the decomposed images/layers. This allows you to make crop marks visible on all channels, providing a useful reference for alignment. A thin cross printed in registration black can also be used to check whether the printing plates are lined up.









8.25. Compose

Report a bug in GIMP Report a documentation error

8.27. Recompose

3/29/25, 8:51 AM 8.27. Recompose

8.27. Recompose

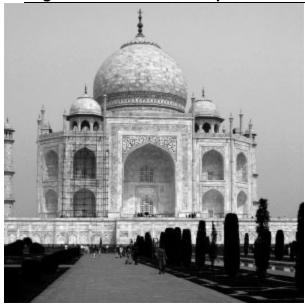




8.27. Recompose

8.27.1. Overview

Figure 16.184. Example for the "Recompose" command



Original image (decomposed to RGB)



Command "Recompose" applied

This command reconstructs an image from its RGB, HSV, etc. components directly, unlike the <u>Compose</u> command which uses a dialog.

8.27.2. Activating the Command

3/29/25, 8:51 AM 8.27. Recompose

You can access this command from the main menu through Colors \rightarrow Components \rightarrow Recompose. This command is active after using Decompose.



8.26. Decompose





8.28. The "Desaturate" Submenu

8.28. The "Desaturate" Submenu



8. The "Colors" Menu



8.28. The "Desaturate" Submenu

The Desaturate submenu contains operations that turn an image into a Grayscale representation, using different methods.

- Section 8.29, "Color to Gray"
- Section 8.30, "Desaturate"
- Section 8.24, "Mono Mixer" Section 8.32, "Sepia"

8.28.1. Activating the Command

You can access this command from the main menu through Colors \rightarrow Desaturate.







8.27. Recompose



8.29. Color to Gray

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8.29. Color to Gray



8. The "Colors" Menu



8.29. Color to Gray

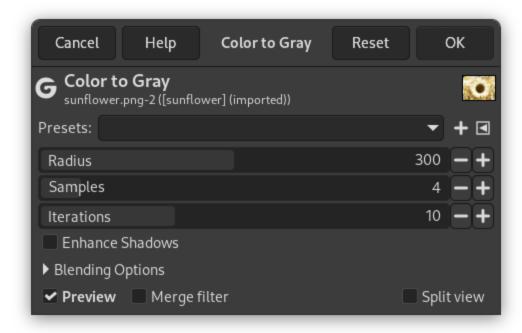
This color to grayscale conversion uses envelopes formed with the so-called <u>STRESS</u> approach to perform local-difference preserving grayscale generation.

8.29.1. Activating the Command

You can access this command from the main menu through Colors → Desaturate → Color to Gray.

8.29.2. Options

Figure 16.185. "Color to Gray" settings



Presets

"Presets" are a common feature for several Colors commands. You can find its description in <u>Section 8.1.1, "Colors Common Features"</u>.

Radius

Neighborhood taken into account, this is the radius in pixels taken into account when deciding which colors map to which gray values.

Samples

Number of samples to do per iteration looking for the range of colors.

Iterations

Number of iterations, a higher number of iterations provides less noisy results at a computational cost.

Enhance Shadows

When enabled details in shadows are boosted at the expense of noise.

Blending Options, Preview, Merge filter, Split view

These are common features described in Section 8.1.1, "Colors Common Features".

3/29/25, 8:51 AM 8.29. Color to Gray



8.28. The "Desaturate" Submenu





8.30. Desaturate

8.30. Desaturate



8. The "Colors" Menu



8.30. Desaturate

By using the Desaturate command, you can convert all of the colors on the active layer to corresponding shades of gray. This differs from converting the image to grayscale in two respects. First, it only operates on the active layer and second, the colors on the layer are still RGB values with three components, with R=G=B, which makes gray. This means that you then can paint on the layer, or individual parts of it, using non-gray colors.



Note

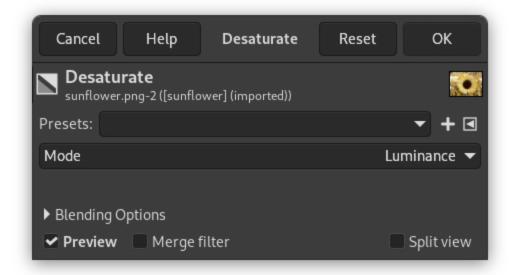
This command only works on layers of <u>RGB</u> images. If the image is in Grayscale or Indexed mode, it can do nothing.

8.30.1. Activating the Command

You can access this command from the main menu through Colors → Desaturate → Desaturate....

8.30.2. Options

Figure 16.186. The "Desaturate" option dialog



Mode: Five options are available for converting from color to black and white:

Luminance

The shades of gray will be calculated using <u>linearized sRGB</u> as Luminance = $(0.22 \times R) + (0.72 \times G) + (0.06 \times B)$

Luma

The shades of gray will be calculated using non-linearized sRGB Luma = $(0.22 \times R) + (0.72 \times G) + (0.06 \times B)$

Lightness (HSL)

The shades of gray will be calculated as Lightness (HSL) = $\frac{1}{2}$ × (max(R,G,B) + min(R,G,B))

Average (HSI Intensity)

The shades of gray will be calculated as

Average (HSI Intensity) = $(R + G + B) \div 3$

Value (HSV)

The shades of gray will be calculated as Value (HSV) = max(R,G,B)

Figure 16.187. Using the five modes to convert two very different color images to black and white



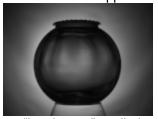
Original image



Original image



"Luminance" applied



"Luminance" applied



"Luma" applied.



"Luma" applied.



<u>"Lightness (HSL)" appl</u>ied.



"Lightness (HSL)" applied.



"Average (HSI Intensity)" applied.



"Average (HSI Intensity)" applied.



"Value (HSV)" applied.



"Value (HSV)" applied.

8.30.3. Comparing results from using different options for converting from color to black and white:

- 1. The degree and direction from which the various ways to convert an image to black and white diverge from a straight Luminance conversion to black and white depends on:
 - The conversion method you choose.
 - The RGB color space in which the conversion is done.
 - How saturated the colors in the original image happen to be, with more saturated starting colors (such as the red globe and the bright yellow sunflower) producing greater amounts of deviation from a straight Luminance conversion.

- The hues (for example yellows vs reds) of the various saturated colors in an image also make a difference.
- Being the maximum of the RGB channel values for each pixel, an HSV Value conversion to black and white is always lighter than the original color image, and also lighter than all the other ways to convert to black and white.
- 2. Comparing the red globe to the yellow sunflower:
 - For the red globe Lightness (HSL) produces a result very similar to Luminance, and Luma produces a conversion that is much darker.
 - For the sunflower, Luma produces a result very similar to Luminance, and Lightness (HSL) produces a conversion that is much darker.
 - Notice that the less saturated parts of each image look more or less the same, regardless of which method is chosen for converting from color to black and white.

8.30.4. More information about the five options for converting from color to black and white:

- 1. More information about Luminance:
 - "Luminance" is the only physically meaningful way to convert a color image to black and white, as the resulting black and white image has the same relative luminance (reflects the same percentage of light from the various shades of gray) as the colors in the original color image.
 - Luminance must be calculated using linearized RGB values.
 - For convenience we say "Luminance", but what we really mean is "Relative Luminance". For more information, see Relative Luminance and CIE 1931 [XYZ] color space.
 - GIMP uses hard-coded sRGB values to do Luminance conversions to black and white. "Future GIMP" will support correct conversions for images in other color spaces.
- 2. More information about Luma:
 - "Luma" is what you get if you use the formula for Luminance on RGB values that haven't been properly linearized.
 - The multipliers have been properly Bradford-adapted to D50, which is required for use in an ICC profile color-managed editing application (at least until the next version of the ICC specs is released and people figure out how to deal with the new freedom to use non-D50 reference white points).
 - GIMP uses hard-coded sRGB values to do Luma conversions to black and white. "Future GIMP" will support correct conversions for images in other color spaces.
- More information about Lightness, Average, and Value:
 The "Lightness (HSL)", "Average (HSI Intensity)", and "Value (HSV)" ways
 - The "Lightness (HSL)", "Average (HSI Intensity)", and "Value (HSV)" ways to convert a color image to black and white use color space models that were invented for fast processing on consumer-grade computers from the 1990s. For details see <u>HSL and HSV</u>, paying particular attention to the section on <u>Disadvantages</u>.
- 4. *In case you are wondering why LAB Lightness* is not among the options for converting an RGB image to black and white, a properly calculated conversion from RGB to LAB Lightness, and then back to RGB, produces exactly the same result as the Luminance conversion to black and white. Here is why:
 - In the XYZ color space, Y is Luminance. So if you convert a color RGB image to XYZ, the "Y" of XYZ is the same number as the R=G=B values that you get when you calculate RGB Luminance.
 - LAB is a perceptually uniform transform of XYZ. If you convert from RGB to XYZ and then to LAB, and set A=B=0.0 (or 0.5 for image editors that put the midpoint of the A and B axes as 0.5 instead of at 0.0), and then convert back to XYZ, the X and Z values will change, but Y will not change.

Tutorials that produce anything other than Relative Luminance when converting an RGB image to black and white using LAB Lightness, very sadly are trading on various mathematical mistakes in the conversion routines.







8.29. Color to Gray



8.31. Mono Mixer

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8.31. Mono Mixer



8. The "Colors" Menu



8.31. Mono Mixer

The Mono Mixer in the Desaturate submenu is the same operation as listed in the Components submenu. For more information see there: <u>Section 8.24, "Mono Mixer"</u>.







8.30. Desaturate



<u>8.32. Sepia</u>

3/29/25, 8:52 AM 8.32. Sepia

8.32. Sepia





8.32. Sepia

8.32.1. Overview

Figure 16.188. Example for the "Sepia" filter



Original image



"Sepia" filter applied

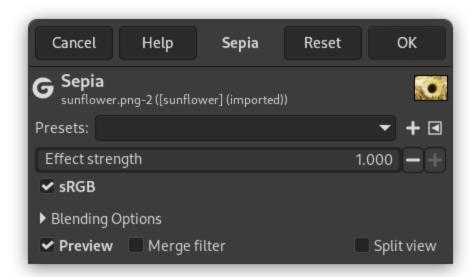
The Sepia filter imitates sepia toning to produce a black-and-white picture with a warm brown-ish tone.

8.32.2. Activating the Filter

3/29/25, 8:52 AM 8.32. Sepia

8.32.3. Options

Figure 16.189. "Sepia" options



Effect strength

This slider lets you control how much the effect blends into the original image. 0.000 is no effect at all, 1.000 is completely replacing the image with its sepia-toned version.

sRGB

This checkbox allows you processing the image in either sRGB gamma-corrected (checked) or linear (unchecked) color space.



8.33. The "Map" Submenu



8. The "Colors" Menu



8.33. The "Map" Submenu

The Map submenu contains operations that allow you to map the colors of an image to different colors in several ways.

- Section 8.34, "Rearrange Colormap"
- Section 8.35, "Set Colormap"
- Section 8.36, "Alien Map"
- Section 8.37, "Color Exchange" Section 8.38, "Rotate Colors"
- Section 8.39, "Gradient Map"
- Section 8.40, "Palette Map"
- Section 8.41, "Sample Colorize"

8.33.1. Activating the Command

You can access this command from the main menu through Colors \rightarrow Map.







8.32. Sepia



8.34. Rearrange Colormap

8.34. Rearrange Colormap







8.34. Rearrange Colormap

Figure 16.190. The "Rearrange Colormap" window



This command allows you to re-organize colors in the palette of *indexed* images. It doesn't modify the image. You can't add or remove colors; for that, see <u>The Indexed Palette Dialog</u>.



Note

If your image is not indexed, this command is disabled.

8.34.1. Activating the Dialog

You can access this command in two ways:

- from the main menu: Colors → Map → Rearrange Colormap.
- from the <u>Colormap Dialog</u> using the right-click context menu Rearrange Colormap.

8.34.2. Using the "Rearrange Colormap" dialog

You can drag and drop colors using the mouse to rearrange the colormap. You can sort colors based on Hue, Saturation and Value by using the buttons. You can also reverse or reset the order of the colors.



Tip

Another way to sort a colormap is by using the <u>Sort Palette...</u> context menu command available in the <u>Palettes Dialog</u>.







8.33. The "Map" Submenu



8.35. Set Colormap

3/29/25, 8:54 AM 8.35. Set Colormap

8.35. Set Colormap

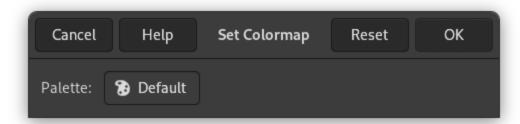


8. The "Colors" Menu



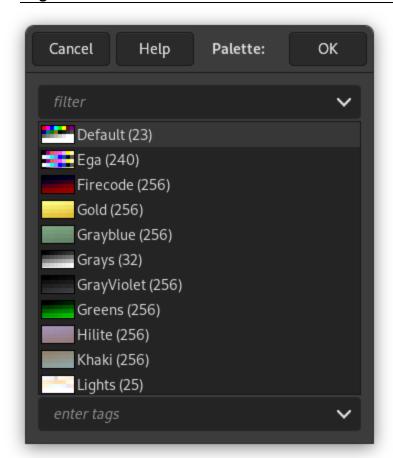
8.35. Set Colormap

Figure 16.191. The "Set Colormap" window



This command opens a dialog which allows you to select another palette to replace the color map of your indexed image. First click in the button with the name of the current palette (which is not the color map of your image yet) to open the Palette Selector:

Figure 16.192. The "Palette Selection" dialog



Choose the palette you want to use from this list and then click the Close button in that dialog, followed by the OK button in the "Set Colormap" dialog to replace the image colormap.

3/29/25, 8:54 AM 8.35. Set Colormap



Note

If your image is not indexed, this command is disabled.

8.35.1. Activating the Command

You can access this command from the main menu through Colors \rightarrow Map \rightarrow Set Colormap.



♠



8.34. Rearrange Colormap



8.36. Alien Map

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8.36. Alien Map





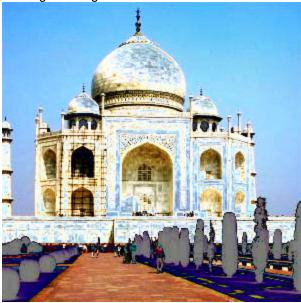
8.36. Alien Map

8.36.1. Overview

Figure 16.193. "Alien Map" filter example



Original image



Filter applied with default settings

This filter heavily distorts image colors by applying trigonometric functions to map color values.

8.36.2. Activating the Filter

8.36.3. Options

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Figure 16.194. The "Alien Map" Dialog



Presets

"Presets" are a common feature for several Colors commands. You can find its description in <u>Section 8.1.1, "Colors Common Features"</u>.

Color Model

The Color Model used for the transformation. Choices are RGB (default) and HSL (Hue, Saturation and Lightness).

The chosen Color Model changes the next settings.

Red frequency, Green frequency, Blue frequency, Hue frequency, Saturation frequency, Lightness frequency These sliders determine the frequency multiplier for each component in the color transformation.

Red phase shift, Green phase shift, Blue phase shift, Hue phase shift, Saturation phase shift, Lightness phase shift These sliders and angle selectors determine how much of a phase shift from one component to another will be done for the chosen input component.

Keep red component, Keep green component, Keep blue component, Keep hue component, Keep saturation component, Keep lightness component

These checkboxes allow you disable one or more of the components from being changed. Any component checked here will not be changed by the filter.

Blending Options, Preview, Merge filter, Split view

These are common features described in Section 8.1.1, "Colors Common Features".

3/29/25, 8:54 AM 8.36. Alien Map



8.35. Set Colormap

1



8.37. Color Exchange





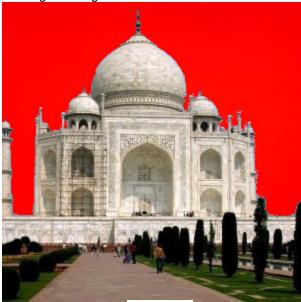
8.37. Color Exchange

8.37.1. Overview

Figure 16.195. "Color Exchange" filter example



Original image



Filter applied with From color RGB (122, 149, 199), To color RGB (255, 0, 0), Red threshold 0.106, Green threshold 0.100, Blue threshold 0.190.

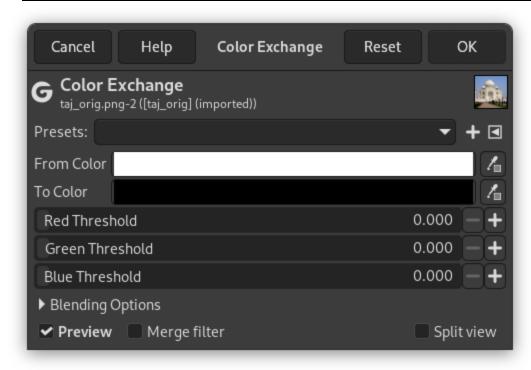
This filter replaces a color with another one.

8.37.2. Activating the Filter

This filter is found in the main menu under Colors \rightarrow Map \rightarrow Color Exchange.

8.37.3. Options

Figure 16.196. The "Color Exchange" Dialog



Presets

"Presets" are a common feature for several Colors commands. You can find its description in <u>Section 8.1.1, "Colors Common Features"</u>.

From color

This is the color you want to replace. To choose a color you can either use the color button to open the Color Picker dialog, or you can use the Color Picker tool to pick a color from your image.

To color

This is the new color you want to use. To choose a color you can either use the color button to open the Color Picker dialog, or you can use the Color Picker tool to pick a color from your image.

Red Threshold, Green Threshold, Blue Threshold

These sliders allow you to set how sensitive the red, green and blue components are to differences from the From color. The higher the threshold, the more pixels will be affected.

Blending Options, Preview, Merge filter, Split view

These are common features described in Section 8.1.1, "Colors Common Features".



3/29/25, 8:55 AM 8.38. Rotate Colors

8.38. Rotate Colors





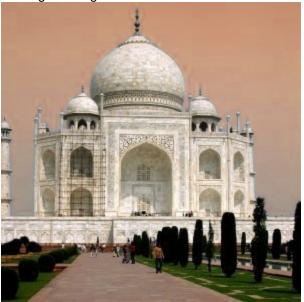
8.38. Rotate Colors

8.38.1. Overview

Figure 16.197. "Rotate Colors" filter example



Original image



Filter "Rotate Colors" applied; the blue color of the sky is within the source range and gets converted to the orange color in the destination range

Colormap Rotation lets you exchange one color range (the Source Range) to another range (the Destination Range).

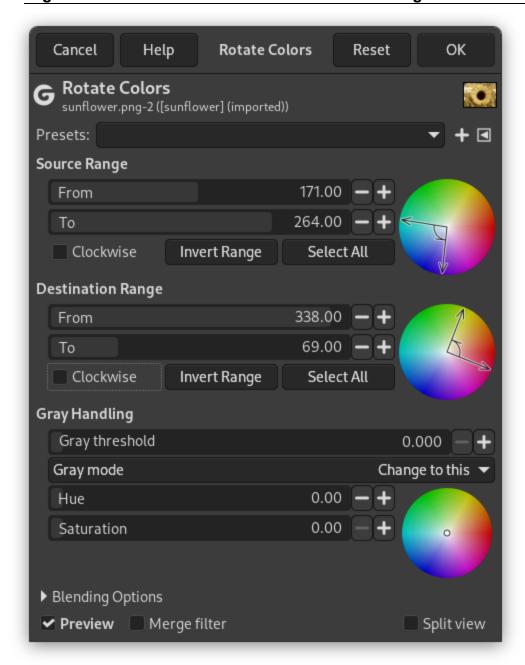
8.38.2. Activating the Filter

3/29/25, 8:55 AM 8.38. Rotate Colors

This filter is found in the main menu under Colors \rightarrow Map \rightarrow Rotate Colors.

8.38.3. Options

Figure 16.198. The "Rotate Colors" Dialog



Presets

"Presets" are a common feature for several Colors commands. You can find its description in <u>Section 8.1.1, "Colors Common Features"</u>.

Source Range, Destination Range

Both source and destination range have a color wheel range selection circle. You can drag both arrow handles to the color location you want. They correspond to the From and To sliders listed below.

From

The angle of the starting position of the color range on the color wheel.

То

The angle of the ending position of the color range on the color wheel.

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Clockwise

When checked the range from start to end is computed clockwise, else counter-clockwise (default).

Invert Range

This button inverts the From and To values.

Select All

This button selects all colors to be inside the range.

Gray Handling

In this section, you can specify how to treat gray. By default, gray is not considered as a color and is not taken in account by the rotation. Here, you can convert slightly saturated colors into gray and you can also convert gray into a color depending on the settings below.

The small circle in the color wheel adjusts the Hue and Saturation that will be used to select the color that represents gray. They correspond to the Hue and Saturation sliders listed below.

Gray threshold

This slider selects which colors will be treated as gray. Colors with a Saturation less than this value will be converted to the selected "gray" color.

Gray mode

- Treat as this causes gray colors inside the source range to be treated as if they had this Hue and saturation. The color will be rotated according to the source and destination ranges.
- Change to this will change gray colors to the selected Hue and Saturation without any rotation.

Blending Options, Preview, Merge filter, Split view

These are common features described in Section 8.1.1, "Colors Common Features".

8.38.4. Examples using Gray Handling

Gray Handling

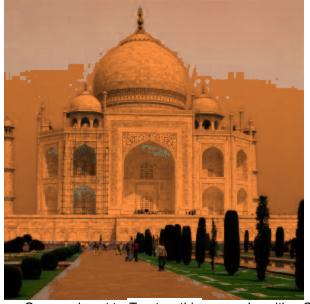
Using the same example as at the top of this page, but now with the following gray handling settings used: Gray threshold 0.340, Hue 220.0, Saturation 0.75.



Note

If you want gray instead of a different color, you should leave Hue and Saturation at 0.

Figure 16.199. "Rotate Colors" filter examples for gray handling



Gray mode set to Treat as this: any color with a Saturation below 0.34 will be converted to orange because the selected blue Hue, Saturation in the source range rotates to orange in the destination range.

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Gray mode set to Change to this: the rotation is now ignored and the color is picked directly based on the chosen Hue and Saturation.



Saturation and Hue set to 0 turns anything below the threshold to gray.









8.39. Gradient Map

8.37. Color Exchange

3/29/25, 8:56 AM 8.39. Gradient Map

8.39. Gradient Map



8. The "Colors" Menu



8.39. Gradient Map

8.39.1. Overview

Figure 16.200. Example of gradient map







Example of Gradient Mapping. Top: Original image. Middle: a gradient. Bottom: result of applying the gradient to the original image with the Gradient Map filter.

This filter uses the current gradient, as shown in the Brush/Pattern/Gradient area of the Toolbox, to recolor the active layer or selection of the image to which the filter is applied. To use it, first choose a gradient from the <u>Gradients Dialog</u>. Then select the part of the image you want to alter, and activate the filter. The filter runs automatically, without showing any dialog or requiring any further input. It uses image color intensities (0 - 255), mapping the darkest pixels to the left end color from the gradient, and the lightest pixels to the right end color from the gradient. Intermediate values are set to the corresponding intermediate colors.

8.39.2. Activating the Filter

This filter is found in the main menu under Colors \rightarrow Map \rightarrow Gradient Map.







8.38. Rotate Colors



8.40. Palette Map

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8.40. Palette Map



8. The "Colors" Menu



8.40. Palette Map

8.40.1. Overview

This plug-in recolors the image using colors from the active palette that you choose in the <u>Palettes dialog</u>. It maps the contents of the specified drawable (layer, selection, etc.) with the active palette. It calculates luminosity of each pixel and replaces the pixel by the palette sample at the corresponding index. A complete black pixel becomes the lowest palette entry, and complete white becomes the highest. Works on both Grayscale and RGB images with or without alpha channel.

8.40.2. Activating the Filter

This filter is found in the main menu under Colors \rightarrow Map \rightarrow Palette Map.

8.40.3. Example

Figure 16.201. The active palette is applied to a gradient image







The colors of the active palette are applied to a black to white gradient. The color with the lowest index in the palette (orange) replaces the black color in the gradient. The color with the highest index in the palette (red) replaces the white color in the gradient. The other colors spread out in the order of the palette.

3/29/25, 8:57 AM 8.40. Palette Map



8.39. Gradient Map

1

8.41. Sample Colorize

8.41. Sample Colorize





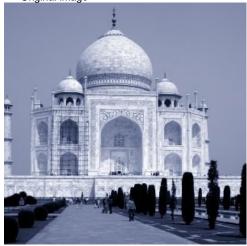
8.41. Sample Colorize

8.41.1. Overview

Figure 16.202. Example for the "Sample Colorize" filter







Filter "Sample Colorize" applied

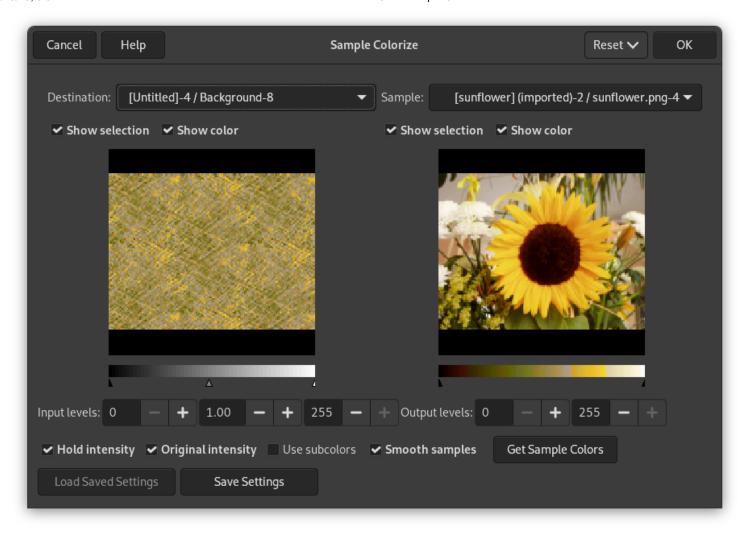
This filter allows you to colorize old black-and-white images by mapping a color source image or a gradient against it.

8.41.2. Activating the Filter

This filter is found in the main menu under Colors \to Map \to Sample Colorize.

8.41.3. Options

Figure 16.203. Options of the "Sample Colorize" filter



The filter window is divided into two parts: Destination on the left, Sampling on the right.

Destination, Sample

By default, displayed image previews reproduce the image you invoked the filter from.

The sample can be the whole preview, or a selection of this preview. With the drop list, you can select another sample-image among the names of images present on your screen when you called the filter. If you choose From Gradient (or From Inverse Gradient), the selected gradient in Gradient Dialog (or its inverse) will be the sample. It will be displayed into the gradient bar below the sample preview. The sampling preview is graved out and two cursors allow you to select the gradient range that will be applied to the image or selection.

Destination is, by default, the source image. The drop list displays the list of images present on your screen when you evoked the filter and allow you to select another destination image. If there is a selection in this image, it will be grayscale, else the whole preview will be grayscale.

Show selection

This option toggles between the whole image and the selection, if it exists.

Show color

This option toggles between colors and grayscale.

Input levels

Three input boxes and three sliders allow to fix importance of dark tones, mid tones and light tones. Result appears interactively in destination preview.

Output levels

Two input boxes and two sliders act the same: they limit the color range which will be applied to destination image. You can choose this range accurately. Result appears interactively in destination preview.

Hold intensity

If this option is checked, the average light intensity of destination image will be the same as that of source image.

Original intensity

If this option is checked, the In levels intensity settings will not be taken in account: original intensity will be preserved.

Get Sample Colors

When you click on this button, the gradient bar below the sample preview displays colors of the sample. If your sample holds few colors, transitions may be abrupt. Check Smooth samples option to improve them.

Use subcolors is more difficult to understand. Let's say first that in a grayscale image there is information only for Value (luminosity, more or less light). In a RGB image, each pixel has information for the three colors and Value. So, pixels with different color may have the same Value. If this option is checked, colors will be mixed and applied to Destination pixels having that Value. If it is unchecked, then the dominating color will be applied.



8.40. Palette Map

Report a bug in GIMP Report a documentation error



8.42. The "Tone Mapping" Submenu

8.42. The "Tone Mapping" Submenu



8. The "Colors" Menu



8.42. The "Tone Mapping" Submenu

The Tone Mapping submenu contains operations that allow you to use tone mapping to adjust the colors of images. Most of the filters provide ways to adjust High Dynamic Range images (HDR) to presentation using a low dynamic range.

- Section 8.43, "Fattal et al. 2002"
- Section 8.44, "Mantiuk 2006" Section 8.45, "Reinhard 2005" Section 8.46, "Stress"
- Section 8.47, "Destripe"
- Section 8.48, "Retinex"

8.42.1. Activating the Command

You can access this command from the main menu through Colors \rightarrow Tone Mapping.







8.41. Sample Colorize



8.43. Fattal et al. 2002

3/29/25, 9:19 AM 8.43. Fattal et al. 2002

8.43. Fattal et al. 2002



8. The "Colors" Menu



8.43. Fattal et al. 2002

8.43.1. Overview

Figure 16.204. "Fattal et al. 2002" tone mapping example



Original image



Filter applied with default settings, after changing image precision in GIMP to 32-bit floating point linear light.

This filter can be used to adapt an image, which may have a high dynamic range (HDR), for presentation using a low dynamic range. This operation reduces the magnitudes of local image gradients, producing luminance within the range 0.0-1.0.

This tonemapping approach was originally presented by Raanan Fattal, in the 2002 SIGGRAPH paper: Gradient Domain High Dynamic Range Compression.



Note

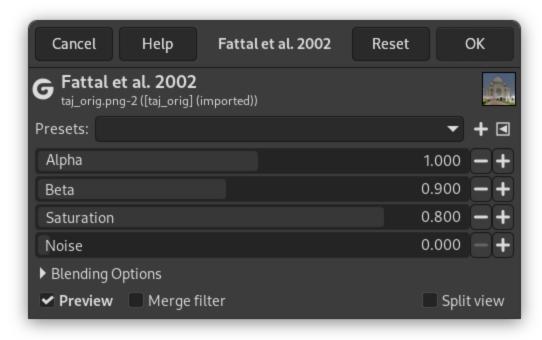
This filter is slow on larger images. For finding the best settings for your image you could make a small relevant selection first and save that as a preset before using that for the whole image.

8.43.2. Activating the Filter

This filter is found in the main menu under Colors \rightarrow Tone Mapping \rightarrow Fattal et al. 2002.

8.43.3. Options

Figure 16.205. The "Fattal et al. 2002" filter Dialog



Presets

"Presets" are a common feature for several Colors commands. You can find its description in <u>Section 8.1.1, "Colors Common Features"</u>.

Alpha

Gradient threshold for detail enhancement.

Beta

Strength of local detail enhancement.

Saturation

Global color saturation factor.

Noise

Gradient threshold for lowering detail enhancement.

Input Type, Clipping, Blending Options, Preview, Merge filter, Split view

These are common features described in Section 8.1.1, "Colors Common Features".









8.44. Mantiuk 2006

3/29/25, 9:19 AM 8.44. Mantiuk 2006

8.44. Mantiuk 2006



8. The "Colors" Menu



8.44. Mantiuk 2006

8.44.1. Overview

Figure 16.206. "Mantiuk 2006" tone mapping example



Original image



Filter applied with default settings, after changing image precision in GIMP to 32-bit floating point linear light.

This filter can be used to adapt an image, which may have a high dynamic range (HDR), for presentation using a low dynamic range. This operation constrains contrasts across multiple spatial frequencies, producing luminance within the range 0.0-1.0.

This tonemapping approach was originally presented by Rafał Mantiuk, Karol Myszkowski, Hans-Peter Seidel. "A Perceptual Framework for Contrast Processing of High Dynamic Range Images (revised and extended version)". In: ACM Transactions on Applied Perception 3, 3 (2006), pp. 286-308.



Note

This filter is slow on larger images. For finding the best settings for your image you could make a small relevant selection first and save that as a preset before using that for the whole image.

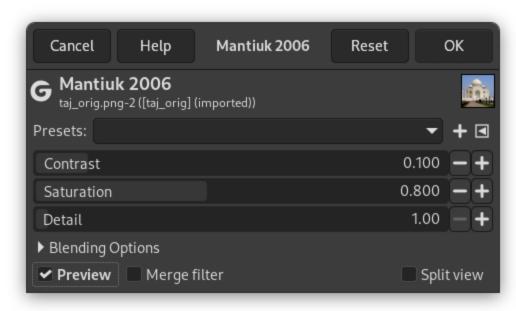
3/29/25, 9:19 AM 8.44. Mantiuk 2006

8.44.2. Activating the Filter

This filter is found in the main menu under Colors \rightarrow Tone Mapping \rightarrow Mantiuk 2006.

8.44.3. Options

Figure 16.207. The "Mantiuk 2006" filter Dialog



Presets

"Presets" are a common feature for several Colors commands. You can find its description in <u>Section 8.1.1, "Colors Common Features"</u>.

Contrast

The amount of contrast compression.

Saturation

Global color saturation factor.

Details

Level of emphasis on image gradient details.

Input Type, Clipping, Blending Options, Preview, Merge filter, Split view

These are common features described in Section 8.1.1, "Colors Common Features".



3/29/25, 9:20 AM 8.45. Reinhard 2005

8.45. Reinhard 2005



8. The "Colors" Menu



8.45. Reinhard 2005

8.45.1. Overview

Figure 16.208. "Reinhard 2005" tone mapping example



Original image



Filter applied with default settings, after changing image precision in GIMP to 32-bit floating point linear light.

This filter can be used to adapt an image, which may have a high dynamic range (HDR), for presentation using a low dynamic range. This is an efficient global operator derived from simple physiological observations, producing luminance within the range 0.0-1.0.

This tonemapping approach was originally presented by Reinhard, E. and Devlin, K. (2005). "Dynamic range reduction inspired by photoreceptor physiology." In: IEEE Transactions on Visualization and Computer Graphics, 11(1) (2005), pp. 13–24.



Note

Although not as slow as the Fattal and Mantiuk filters, the Reinhard filter is not very fast on larger images. For finding the best settings for your image you could make a small relevant selection first and save that as a preset before using that for the whole image.

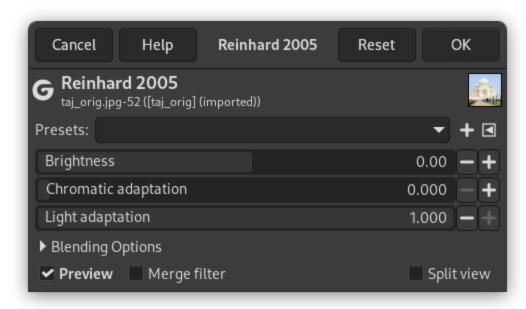
3/29/25, 9:20 AM 8.45. Reinhard 2005

8.45.2. Activating the Filter

This filter is found in the main menu under Colors \rightarrow Tone Mapping \rightarrow Reinhard 2005.

8.45.3. Options

Figure 16.209. The "Reinhard 2005" filter Dialog



Presets

"Presets" are a common feature for several Colors commands. You can find its description in <u>Section 8.1.1, "Colors Common Features"</u>.

Brightness

Overall brightness of the image.

Chromatic adaptation

Adaptation to color variation across the image.

Light adaptation

Adaptation to light variation across the image.

Input Type, Clipping, Blending Options, Preview, Merge filter, Split view

These are common features described in Section 8.1.1, "Colors Common Features".



3/29/25, 9:20 AM 8.46. Stress

8.46. Stress





8.46. Stress

8.46.1. Overview

Figure 16.210. "Stress" tone mapping example



Original image



Filter applied with default settings, after changing image precision in GIMP to 32-bit floating point linear light.

3/29/25, 9:20 AM 8.46. Stress



Filter applied with Samples 15 and Iterations 20.

This filter uses a Spatio Temporal Retinex-like Envelope with Stochastic Sampling (STRESS). The algorithms work by recalculating each pixel using envelopes for local upper and lower bounds in the image. The envelopes are obtained sampling neighbor pixels and can be interpreted as local reference maximum and minimum. This method can be used for local contrast stretching, automatic color correction, high dynamic range image rendering, spatial color gamut mapping, and color to grayscale conversion with good results.

Based on Ø. Kolås, I. Farup, and A. Rizzi, "Spatio-temporal retinex-inspired envelope with stochastic sampling: A framework for spatial color algorithms", Journal of Imaging Science and Technology, vol. 55, no. 4, pp. 1–10, 2011.



Note

This filter is slow on larger images. For finding the best settings for your image you could make a small relevant selection first and save that as a preset before using that for the whole image.

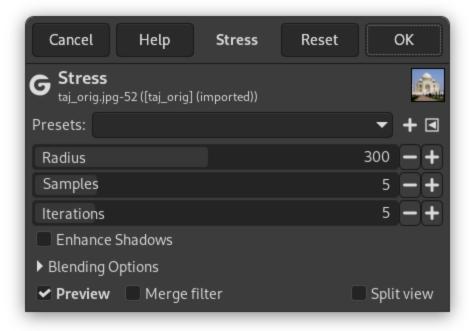
8.46.2. Activating the Filter

This filter is found in the main menu under Colors \rightarrow Tone Mapping \rightarrow Stress.

8.46.3. Options

Figure 16.211. The "Stress" filter Dialog

3/29/25, 9:20 AM 8.46. Stress



Presets

"Presets" are a common feature for several Colors commands. You can find its description in <u>Section 8.1.1, "Colors Common Features"</u>.

Radius

Neighborhood taken into account, for enhancement ideal values are close to the longest side of the image (which can be either width or height). Increasing this value makes the filter slower.

Samples

Number of samples to do per iteration looking for the range of colors.

Iterations

Number of iterations; a higher number of iterations provides a less noisy rendering but makes the filter slower.

Enhance Shadows

When enabled shadow regions are also enhanced; when disabled a more natural result is yielded.

Input Type, Clipping, Blending Options, Preview, Merge filter, Split view

Report a bug in GIMP Report a documentation error

These are common features described in Section 8.1.1, "Colors Common Features".







8.45. Reinhard 2005

 $\stackrel{\frown}{\Box}$

8.47. Destripe

3/29/25, 9:21 AM 8.47. Destripe

8.47. Destripe





8.47. Destripe

8.47.1. Overview

It is used to remove vertical stripes caused by poor quality scanners. It works by adding a pattern that will interfere with the image, removing stripes if setting is good. This "negative" pattern is calculated from vertical elements of the image, so don't be surprised if you see stripes on the preview of an image that has none. And if pattern "strength"; is too high, your image will be striped.

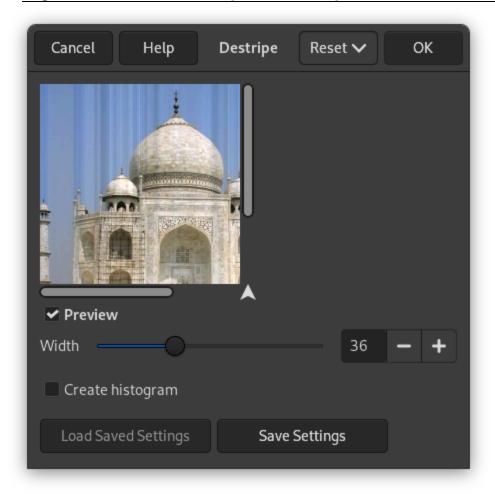
If, after a first pass, a stripe persists, rectangular-select it and apply filter again (all other selection type may worsen the result).

8.47.2. Activating the Filter

This filter is found in the main menu under Colors \rightarrow Tone Mapping \rightarrow Destripe....

8.47.3. Options

Figure 16.212. "Destripe" filter options



3/29/25, 9:21 AM 8.47. Destripe

Preview

If checked, parameter setting results are interactively displayed in preview. Scroll bars allow you to move around the image.

Create histogram

This "histogram" is a black and white image showing the interference pattern more legibly.

Width

Slider and input box allow to set "strength" of filter (2-100): more than 60 is rarely necessary and may create artifacts.







8.46. Stress



8.48. Retinex

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8.48. Retinex





8.48. Retinex

8.48.1. Overview

Figure 16.213. "Retinex" example







"Retinex" filter applied. Note new details in the upper right corner.

Retinex improves visual rendering of an image when lighting conditions are not good. While our eye can see colors correctly when light is low, cameras and video cams can't manage this well. The MSRCR (MultiScale Retinex with Color Restoration) algorithm, which is at the root of the Retinex filter, is inspired by the eye biological mechanisms to adapt itself to these conditions. Retinex stands for Retina + cortex.

Besides digital photography, the Retinex algorithm is also used to make the information in astronomical photos visible and, in medicine, detect poorly visible structures in X-rays or scans.



Note

This command only works on RGB images. If the image is Grayscale or Indexed, the menu entry is disabled.

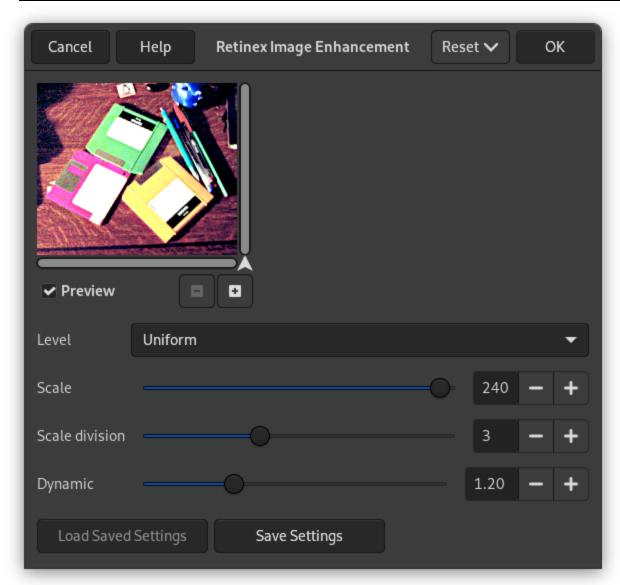
3/29/25, 9:21 AM 8.48. Retinex

8.48.2. Activating the Filter

This filter is found in the main menu under Colors \rightarrow Tone Mapping \rightarrow Retinex....

8.48.3. Options

Figure 16.214. "Retinex" filter options



These options call for notions that only mathematicians and imagery engineers can understand. In actual practice, the user has to grope about for the best setting. However, the following explanations should help out the experienced GIMP user.

Level

Here is what the plug-in author writes on his site [PLUGIN-RETINEX]: "To characterize color variations and the light source, a difference in intensity is made between the (Gaussian) filter responses at different scales. These parameters allow you to specify how to distribute the values between the minimum scale value (sigma 2.0) and the maximum (sigma equal to image size)".

Uniform

Uniform tends to treat both low and high intensity areas equally.

Low

As a rule of thumb, low does "flare up" the lower intensity areas on the image.

3/29/25, 9:21 AM 8.48. Retinex

High

High tends to "bury" the lower intensity areas in favor of a better rendering of the clearer areas of the image.

Scale

Determines the depth of the Retinex scale. Minimum value is 16, a value providing rough, unrefined filtering. Maximum value is 250. Optimal and default value is 240.

Scale division

Determines the number of iterations in the multiscale Retinex filter. The minimum required, and the recommended value is three. Only one or two scale divisions removes the multiscale aspect and falls back to a single scale Retinex filtering. A value that is too high tends to introduce noise in the picture.

Dynamic

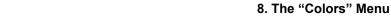
As the MSR algorithm tends to make the image lighter, this slider allows you to adjust color saturation contamination around the new average color. A higher value means less color saturation. This is definitely the parameter you want to tweak for optimal results, because its effect is extremely image-dependent.

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 8.47. Destripe
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 8.49. The "Info" Submenu

8.49. The "Info" Submenu





8.49. The "Info" Submenu

The Info submenu contains operations that give you color related information about your image.

8.49.1. Activating the Submenu

You can access this submenu from the main menu through Colors \rightarrow Info.

8.49.2. The Contents of the "Info" Submenu

The submenu contains the following commands:

- Section 8.50, "Histogram"
- Section 8.52, "Border Average"
- Section 8.51, "Export Histogram" Section 8.53, "Smooth Palette"







8.48. Retinex

Report a bug in GIMP Report a documentation error

8.50. Histogram

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8.50. Histogram



8. The "Colors" Menu



8.50. Histogram

The Histogram dialog is documented in <u>Section 2.5, "Histogram Dialog"</u>.







8.49. The "Info" Submenu



8.51. Export Histogram

8.51. Export Histogram



8. The "Colors" Menu



8.51. Export Histogram

8.51.1. Overview

Exports the image histogram to a text file, so it can be used by other programs and loaded into spreadsheets. The histogram is produced for the selected image area. Fully transparent pixels are not counted.

The resulting file is a CSV file (Comma Separated Values), which can be imported directly in most spreadsheet programs. The first row of the CSV file is a title row. One data row is generated for each "Bucket". Each pixel value can be in the range of 0 to 255, and will be included in one of the buckets depending on the bucket's range.

The first column is titled "Range Start" and contains the starting value of the bucket. The following columns contain the values for different channels. Which channels will be included depends on the image type. The meaning of the values in each of the channel columns, depends on the Output Format option.

Figure 16.215. Example of file exported by "Export Histogram"

Range start	, Value,	Red,	Green,	Blue
0	0.0,	0.0,	486.0,	0.0
1,	0.0,	0.0,	300.0,	0.0
2	0.0,	0.0,	336.0,	0.0
3	0.0,	0.0,	399.0,	0.0
4,	0.0,	0.0,	510.0,	0.0

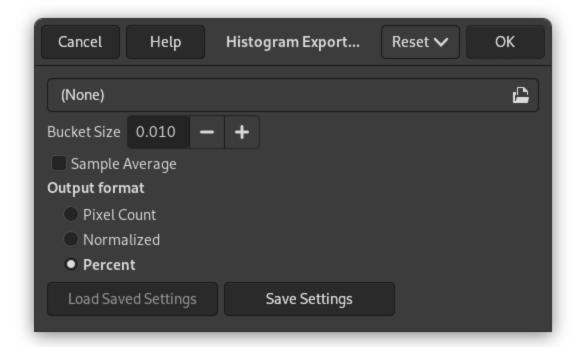
The example file above was generated for an RGB image, using the Pixel count output format, and a Bucket Size of 1. The row starting with the number 3 describes the fourth bucket and will include all pixels from value 3 up to (but not including) value 4. The number 399.0 in that row can then be interpreted as "There are 399 pixels that have a Green value of 3".

8.51.2. Activating the Filter

This filter is found in the main menu under Colors \rightarrow Info \rightarrow Export histogram....

8.51.3. Options

Figure 16.216. "Export Histogram" options



Histogram File

The file into which the histogram will be exported.

Bucket Size

The Bucket Size lets you control the number of values considered as similar and counted in the same "bucket". A higher bucket size will produce less buckets, and thus less rows in the exported file. For example, a Bucket Size of 1 will produced 256 buckets, whereas a bucket size of 16 will produce 16 buckets.

Sample Average

If Sample Average is activated, the histogram will be generated for an image obtained by merging all visible layers. Otherwise, the histogram will only consider the current layer.

Output format

If the Pixel count option is chosen, the values in the generated file will reflect the amount of pixels in each bucket. If Normalized is chosen, the values will be the amount of pixels in the bucket divided by the total amount of pixels. The Percent option is similar to Normalized, but the values are formatted as percents.



8.52. Border Average





8.52. Border Average

8.52.1. Overview

Figure 16.217. Example for the "Border Average" filter



Original image



Foreground color in the Toolbox after applying the "Border Average" filter

This plug-in calculates the most often used color in a specified border of the active layer or selection. It can gather similar colors together so that they become predominant. The calculated color becomes the <u>foreground color in the Toolbox</u>. This filter is interesting when you have to find a Web page color background that differs as little as <u>possible</u> from your image border. The action of this filter is not registered in Undo History and can't be undone with **Ctrl** + **Z**: it doesn't modify the image.



Note

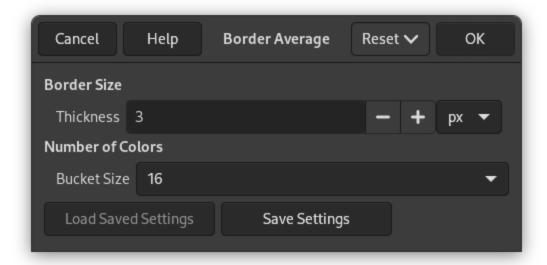
This command only works on RGB images. If the image is Grayscale or Indexed, the menu entry is disabled.

8.52.2. Activating the Filter

This filter is found in the main menu under Colors \rightarrow Info \rightarrow Border Average....

8.52.3. Options

Figure 16.218. Options of the "Border Average" filter



Border Size

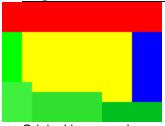
The border Thickness in pixels.

Number of Colors

The Bucket Size lets you control the number of colors considered as similar and counted with the same "bucket". A low bucket size value (i.e. a high bucket number) gives you better precision in the calculation of the average color. Note that better precision does not necessarily mean better results (see example below).

8.52.4. Examples illustrating the "Border Average" filter

Figure 16.219. Original image



Original image: colors are pure Red (255;0;0), pure Blue (0;0;255), and different but similar kinds of Green (0;255;0, 63;240;63, 48;224;47, 0;192;38).

Figure 16.220. "Number of Colors" is set to 8:



The resulting color is a Red (254,2,2).

The bucket size is low. So the bucket number is high. All color shades can be stored in different buckets. Here, the bucket containing red is the most filled. The resulting color is a nearly pure Red (254,2,2) and becomes the foreground color in the Toolbox.

Figure 16.221. "Number of Colors" is set to 64:



The resulting color is Green (32,224,32).

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Here the bucket size is high, the number of buckets low. Similar colors (here green) are stored in a same bucket. This "green" bucket is now the most filled. All colors in this bucket have the same values for the two most significant bits: $(00^{******};11^{******};00^{******})$. The remaining 6 bits may have any values from 0 to 63 for the respective channel. So in this bucket, color red channels range from 0 to 63, green channels from 192 to 255, blue channels from 0 to 63. The resulting color is Green (32,224,32), which, for every channel, is the average between the limits of the channel range (63 + 0)/2, (255+192)/2, (63+0)/2.



1



8.51. Export Histogram



8.53. Smooth Palette

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8.53. Smooth Palette



8. The "Colors" Menu



8.53. Smooth Palette

8.53.1. Overview

Figure 16.222. Example for the "Smooth Palette" filter



Original image



Filter "Smooth Palette" applied

It creates a striped palette from colors in active layer or selection. The main purpose of this filter is to create color-maps to be used with the Flame filter.



Note

This command only works on RGB images. If the image is Grayscale or Indexed, the menu entry is disabled.

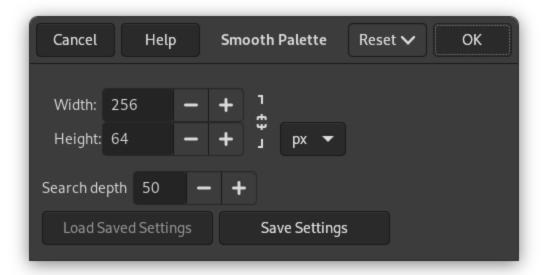
8.53.2. Activating the Filter

This filter is found in the main menu under Colors \rightarrow Info \rightarrow Smooth Palette....

8.53.3. Options

Figure 16.223. "Smooth Palette" options

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Width, Height

You can set palette dimensions for Width and Height. Dimensions are linked when the chain is not broken. You can also select the unit.

Search depth

Increasing Search depth (1 - 1024) will result in more shades in the palette.



8.54. Threshold



8. The "Colors" Menu



8.54. Threshold

The Threshold filter transforms the current layer or the selection into a black and white image, where white pixels represent the pixels of the image where the value for the chosen Channel is in the threshold range, and black pixels represent pixels with a value outside the threshold range.

You can use it to enhance a black and white image (scanned text for example) or to create selection masks.



Note

As this filter creates a black and white image, the anti-aliasing of the original image disappears. If this poses a problem, use the <u>Levels</u> tool instead.

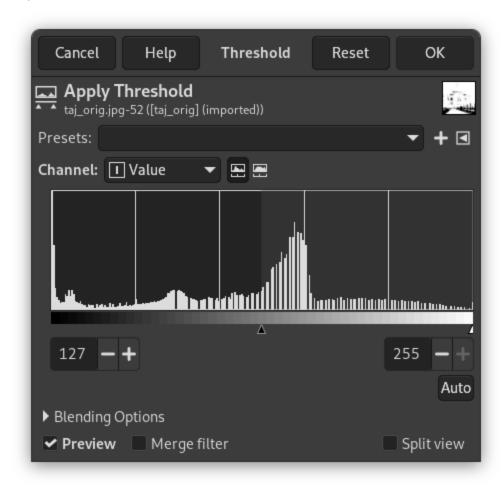
8.54.1. Activating the Filter

There are different possibilities to activate this:

- This filter is found in the main menu under Colors → Threshold...,
- or by clicking the $\frac{1}{2}$ icon in the Toolbox if Threshold has been enabled as a tool (which is disabled by default). For this, please refer to Section 6.13, "Toolbox".

8.54.2. Options

Figure 16.224. Threshold filter dialog



Presets

"Presets" are a common feature for several Colors commands. You can find its description in <u>Section 8.1.1, "Colors Common Features"</u>.

Channel

This allows you to select which channel(s) will be used to apply the Threshold. The default is Value, which will use all color channels, but you can also choose to use a single channel: Red, Green, Blue and Alpha (only available when the layer has an alpha channel), Luminance, or RGB.

Linear histogram , Logarithmic histogram

These two buttons to the right of the Channel selection let you choose the type of histogram shown.

Threshold range

The Threshold tool provides a visual graph, a histogram, of the intensity value of the active layer or selection. You can set the threshold range either using the minimum and maximum input boxes, or by clicking and dragging on the graph. It allows you to select a part of the image with some intensity from a background with another intensity. Pixels inside the range are white, and the others are black. Adjust the range to get the selection you want in white on black background. The Auto button can be used to automatically adjust the threshold.

Blending Options, Preview, Merge filter, Split view

These are common features described in Section 8.1.1, "Colors Common Features".

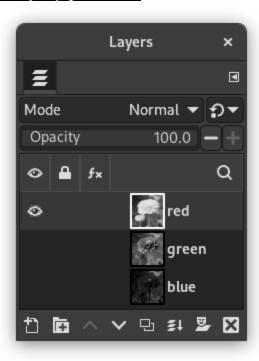
8.54.3. Using Threshold and Quick Mask to create a selection mask

Sometimes an element you want to extract from an image can stand out well against the background. In this case, you can use the Threshold tool to select this element as a whole, and then use a Quick mask.

1. First start decomposing your image into its RGB and HSV components by using the Decompose filter. A new grayscale image is created and the components are displayed as layers in the Layers Dialog. These layers come with a thumbnail but it is too small for an easy study. You can, of course, increase the size of this preview with the dialog menu (the small triangular button), but playing with the "eyes" is more simple to display the wanted layer in the decompose image. Select the layer that isolates the element the best.

Figure 16.225. The original image, the decompose image and its Layers dialog





2. Call the Threshold tool from the decompose image. By moving the black cursor, fit threshold to isolate the best the element you want to extract. This will probably not be perfect: we will enhance the result with the selection mask we are going to create.



Warning

Make sure you have selected the right layer when you call the Threshold tool: when it is opened, you can't change to another layer.

Figure 16.226. The selected layer after threshold fit



We got the best outline for our flower. There are several red objects which we must remove.

- 3. Make sure the image displaying the selected layer is active and copy it to the clipboard with Ctrl + C.
- 4. Now, make the original image active. Click the Quick Mask button at the bottom-left corner of the image window: the image gets covered with a red (default) translucent mask. This red color does not suit well to our image with much red: go to the Channels dialog, activate the "Quick mask" channel and change this color with the Edit Channel Attributes. Come back to the original image. Press Ctrl + V to paste the previously copied layer.

Figure 16.227. The mask



5. Voilà. Your selection mask is ready: you can improve the selection as usual. When the selection is ready, disable the Quick mask by clicking its button again: you will see the <u>marching ants</u> around the selection.

Figure 16.228. The result



We used the Zoom to work at a pixel level, <u>Free Select</u> to remove large unwanted areas, the pencil (to get hard limits), black paint to remove selected areas, white paint to add selected areas, especially for stem.











8.55. Colorize

3/29/25, 9:23 AM 8.55. Colorize

8.55. Colorize



8. The "Colors" Menu



8.55. Colorize

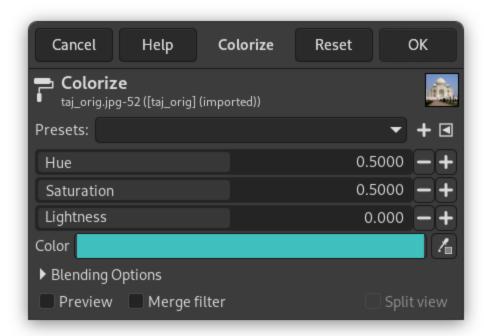
The Colorize filter renders the active layer or selection into a grayscale image seen through a colored glass. You can use it to give a "Sepia" effect to your image. See Color model for Hue, Saturation, Luminosity.

8.55.1. Activating the Filter

This filter is found in the main menu under Colors → Colorize....

8.55.2. Options

Figure 16.229. Colorize filter dialog



Presets

"Presets" are a common feature for several Colors commands. You can find its description in <u>Section 8.1.1, "Colors Common Features"</u>.

Hue

The slider and the numeric input box allow you to select a Hue value in the range: 0.0 to 1.0.

Saturation

The slider and the numeric input box allows you to select a Saturation value in the range: 0.0 to 1.0.

Lightness

The slider and the numeric input box allow you to select a Lightness value in the range: -1.0 (dark) to +1.0 (light).

Color

Using the color button or the color picker you can quickly select the color used to colorize your image. Selecting a color here will adjust the sliders above it.

Blending Options, Preview, Merge filter, Split view

These are common features described in <a>Section 8.1.1, "Colors Common Features".

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8.54. Threshold





8.56. Posterize

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8.56. Posterize



8. The "Colors" Menu



8.56. Posterize

8.56.1. Overview

Figure 16.230. Example for the "Posterize" filter



Original image



"Posterize" with 3 levels applied

This tool is designed to intelligently weigh the pixel colors of the selection or active layer and reduce the number of colors while maintaining a semblance of the original image characteristics.

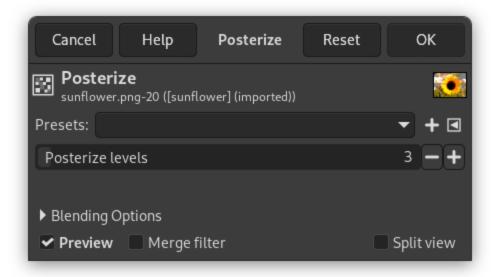
8.56.2. Activating the Filter

This filter is found in the main menu under Colors \rightarrow Posterize....

8.56.3. Options

Figure 16.231. Posterize filter dialog

3/29/25, 9:23 AM 8.56. Posterize



Presets

"Presets" are a common feature for several Colors commands. You can find its description in <u>Section 8.1.1, "Colors Common Features"</u>.

Posterize Levels

Here, "level" means "number of colors per channel".

This slider and the input boxes with arrowheads allow you to set the number of levels (2-256) in each RGB channel that the tool uses to describe the active layer. The maximum total number of colors is the combination of these levels. A level to 3 will give $3^3 = 27$ colors.

Blending Options, Preview, Merge filter, Split view

These are common features described in Section 8.1.1, "Colors Common Features".



https://docs.gimp.org/3.0/en/gimp-filter-posterize.html

8.57. Color to Alpha...



8. The "Colors" Menu



8.57. Color to Alpha...

8.57.1. Overview

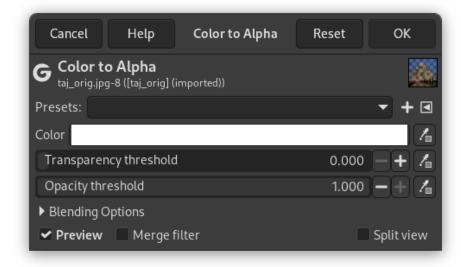
The Color to Alpha command makes transparent all pixels of the active layer that have a selected color. It attempts to preserve anti-aliasing information by using a partially intelligent algorithm that replaces weak color information with weak alpha information. In this way, areas that contain an element of the selected color maintain a blended appearance with their surrounding pixels.

8.57.2. Activating the Filter

This filter is found in the main menu under Colors \rightarrow Color to Alpha....

8.57.3. Options

Figure 16.232. "Color to Alpha" filter dialog



Presets

"Presets" are a common feature for several Colors commands. You can find its description in Section 8.1.1, "Colors Common Features".

Color

Clicking the color swatch provides a color selection dialog where you can select a color. You can also select a color using the eye dropper on the right.

"Color to alpha" comes with a GEGL option dialog under Toolbox. When the Sample average option is unchecked, color picker picks only one pixel color. When the option is checked, mouse pointer goes with a square limiting a pixel sample that determines a merged sample "color". You can fix square size directly in text box, or using arrow heads, or Up and Down keyboard keys.

Right clicking the color swatch displays a menu where you can select Foreground or Background colors, White or Black.

Transparency threshold, Opacity threshold

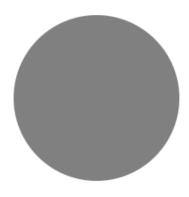
- Transparency: the limit below which colors become transparent.
- Opacity: the limit above which colors become opaque.

Color to Alpha modifies the transparency (and color) of the pixels based on their distance from the selected background color (the "Color" option) — the closer they are to the background color, the more transparent they become, with the background color becoming fully transparent.

The transparency and opacity thresholds control how close colors should be to the background color before they become fully transparent, and how far they should be from the background color before they remain fully opaque, respectively. With the default values of 0 and 1, only the background color becomes fully transparent, and only the colors farthest away from the background color remain fully opaque.

For example, while the default values work well for removing a white background from a black object, if the object is gray instead [fig. 1] it will become semi-transparent [fig. 2], since gray is midway between white and black. Lowering the opacity threshold to 0.5 fixes that, by keeping all pixels that are gray or darker (all pixels whose distance from white is 0.5 or more, on a [0,1] scale) fully opaque [fig. 3]. The transparency threshold works similarly: raising it causes more colors in the neighborhood of the background color to become fully transparent. This is mostly useful with noisy images, in which the background is not fully solid. However, unlike in other cases, when the transparency threshold is above 0, recomposing the result against the background color no longer reproduces the exact same image. At the risk of being a bit technical, this can be visualized by thinking of the RGB cube. The background color is a point within the cube, and the transparency and opacity thresholds are two sub-cubes centered around the background color. Everything inside the transparency-threshold cube becomes fully transparent, everything outside the opacity-threshold cube remains fully opaque, and everything in between gradually transitions from transparent to opaque. In image [fig. 4] you can see the Red-Green face of the RGB cube. (1) is the background color (Red=0.5, Green=0.5, Blue=0.0), (2) is the transparency threshold (set to 0.1), and (3) is the opacity threshold (set to 0.4).

Figure 16.233. Color to Alpha Thresholds examples



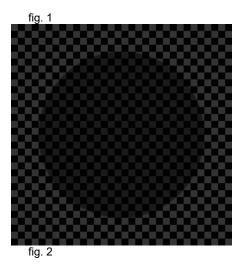
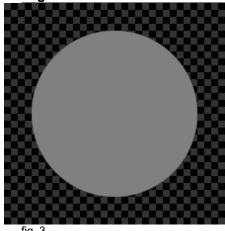


Figure 16.234. Color to Alpha Thresholds examples



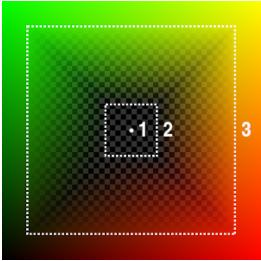


fig. 4

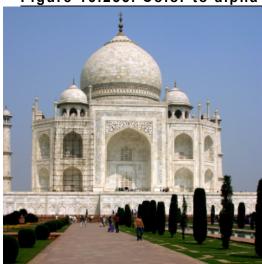
Blending Options, Preview, Merge filter, Split view

These are common features described in <u>Section 8.1.1, "Colors Common Features"</u>.

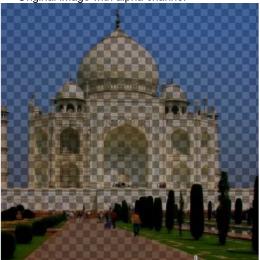
8.57.4. Using Color to Alpha

- 1. Add an alpha channel to your image if necessary in the image window menu under Layer → Transparency → Add Alpha Channel.
- 2. Open Color to alpha.

Figure 16.235. Color to alpha open with default options



Original image with alpha channel



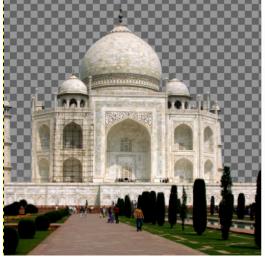
Original image with an alpha channel. Color to alpha with default options: "Color" is white. Opacity threshold = 1.00 is maximum, and so only the colors farthest away from the "Color" remain fully opaque. Transparency threshold = 0 and so the "Color" is fully transparent.

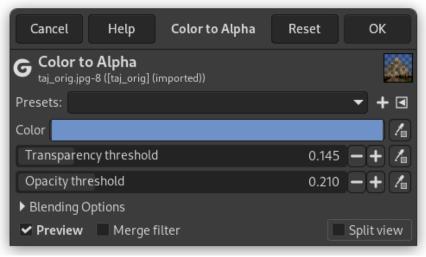
- 3. Uncheck Preview option.
- 4. Pick color, here the sky.
- Re-check Preview option.



"Color" from sky. Default thresholds.

6. Adapt Transparency and Opacity thresholds proceeding by trial and error.





Only sky is transparent. Opacity threshold decreased to make farthest colors (monument, trees and road) fully opaque. Transparency threshold increased to make "Color" fully transparent and delete some imperfections in sky.



8.56. Posterize

Report a bug in GIMP Report a documentation error





8.58. Dither

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8.58. Dither



8. The "Colors" Menu



8.58. Dither

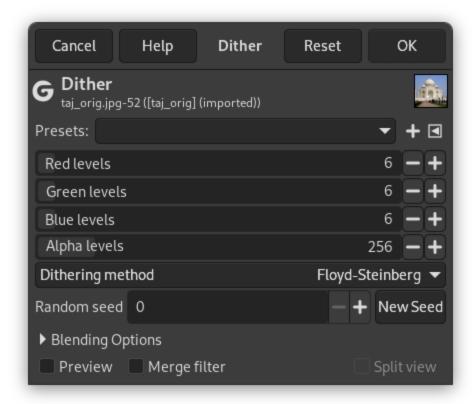
This filter can reduce the number of colors in an image by reducing the levels per channel (colors and alpha). Different dithering methods can be specified to counteract quantization induced banding.

8.58.1. Activating the Filter

This filter is found in the main menu under Colors → Dither....

8.58.2. Options

Figure 16.236. Dither filter dialog



Presets

"Presets" are a common feature for several Colors commands. You can find its description in <u>Section 8.1.1, "Colors Common Features"</u>.

Red levels, Green levels, Blue levels, Alpha levels

These sliders allow you to set the number of levels for the respective red, green, blue and alpha channels.

Dithering method

Here you can specify the dithering method to use.

None

No dithering will be performed on the image.

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Floyd-Steinberg

This is the most commonly used method of dithering and the default for this filter. For more information see Floyd–Steinberg dithering on Wikipedia.

Bayer

The Bayer Matrix is another common method of dithering used to reduce the number of colors. The algorithm is characterized by noticeable crosshatch patterns in the result. For more information see Ordered dithering on Wikipedia.

Random, Random Covariant

These methods of dithering use randomization of the pixel values to reduce the number of colors.

Arithmetic add, Arithmetic add covariant, Arithmetic xor, Arithmetic xor covariant

These methods of dithering are spatially stable, based on magic numbers and arithmetic. For more information see a dither.

Blue Noise, Blue Noise Covariant

These dithering methods using so-called blue noise have been found to be the least unsightly and distracting. For more information see <u>Dithering in image processing on Wikipedia</u>.

Random seed. New Seed

This option controls the randomness of the filter. The Random seed box lets you manually enter a seed for the randomization algorithm used. You can also generate a random seed by pressing the New Seed button. If the same random seed is used in the same situation, the filter produces exactly the same results. A different random seed produces different results.

Input Type, Clipping, Blending Options, Preview, Merge filter, Split view

These are common features described in Section 8.1.1, "Colors Common Features".







8.57. Color to Alpha...



8.59. RGB Clip

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8.59. RGB Clip



8. The "Colors" Menu



8.59. RGB Clip

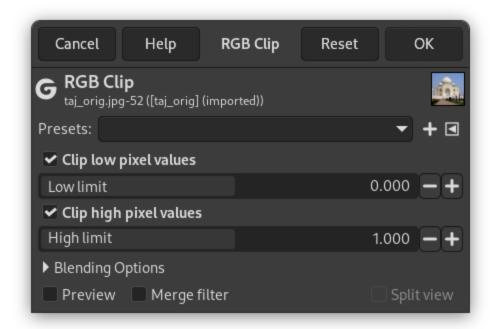
This filter can be used to keep RGB pixel values inside a specific range. Most of the time this filter seems to work best if you have both the low and high limit between 0 and 1. However, you can get some cool effects when selecting a high close to 0 and and low greater than 1.

8.59.1. Activating the Filter

This filter is found in the main menu under Colors \rightarrow RGB Clip....

8.59.2. Options

Figure 16.237. RGB Clip filter dialog



Presets

"Presets" are a common feature for several Colors commands. You can find its description in <u>Section 8.1.1, "Colors Common Features"</u>.

Clip low level values

When checked, low pixel values will be clipped.

Low limit

Pixel values lower than this limit will be set to it.

Clip high pixel values

When checked, high pixel values will be clipped.

High limit

Pixel values higher than this limit will be set to it.

Input Type, Clipping, Blending Options, Preview, Merge filter, Split view

These are common features described in Section 8.1.1, "Colors Common Features".

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8.58. Dither





Report a bug in GIMP Report a documentation error

8.60. Hot...

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8.60. Hot...



8. The "Colors" Menu



8.60. Hot...

8.60.1. Overview

This command identifies and modifies pixels which might cause problems when displayed on PAL or NTSC TV screens.

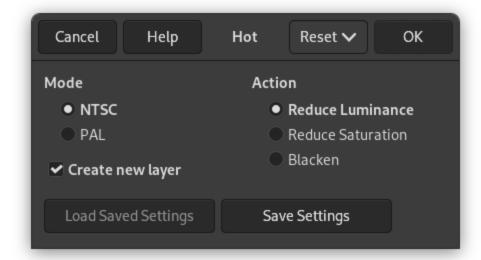
8.60.2. Activating the Filter

This filter is found in the main menu under Colors \rightarrow Hot....

This command only works on images in RGB mode, and only if the active layer does not have an alpha channel. Otherwise the command is disabled.

8.60.3. Options

Figure 16.238. "Hot" options



Mode

You have to select the TV mode: PAL or NTSC.

Action

Here you can select the method used to remove hot pixels.

- Reduce Luminance
- Reduce Saturation
- Blacken: this changes hot pixels to black.

Create new layer

When this option is checked, work is performed on a new layer instead of the active layer.

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8.59. RGB Clip

1

8.61. Local Threshold

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8.61. Local Threshold



8. The "Colors" Menu



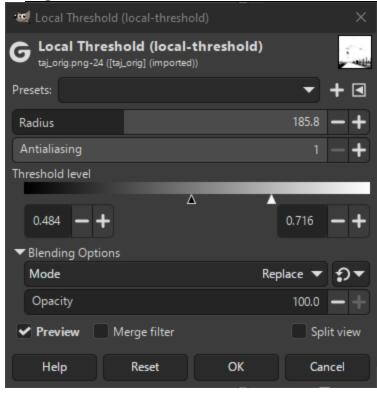
8.61. Local Threshold

8.61.1. Activating the Filter

This filter is found in the main menu under Colors → Local Threshold....

8.61.2. Options

Figure 16.239. "Local Threshold" filter options



Presets

"Presets" are a common feature for several Colors commands. You can find its description in <u>Section 8.1.1, "Colors Common Features"</u>.

Radius

Standard deviation of gaussian neighborhood average for computing local contrast. If 0 is used a global threshold is used instead of one based on local contrast.

Antialiasing

This sets a rough target of levels of accuracy for antialiasing, or set to 1 to disable antialiasing.

Threshold level

Thresholding level consists of two values. Change the lower threshold towards 0 to minimize shadows or towards 1.0 to minimize highlights. The high threshold decides the maximum values to include, above this it gets set to 0.

Blending Options, Preview, Merge filter, Split view

These are common features described in Section 8.1.1, "Colors Common Features".

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8.61. Local Threshold



8.60. Hot...

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9. The "Tools" Menu

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9. The "Tools" Menu

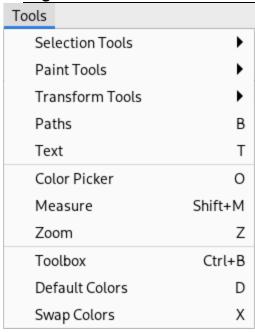




9. The "Tools" Menu

9.1. Introduction to the "Tools" Menu

Figure 16.240. Contents of the "Tools" menu



The menu entries on the Tools menu access the GIMP tools. All of the tools available in GIMP are extensively described in the Tools section.







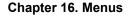
8.61. Local Threshold



10. The "Filters" Menu

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10. The "Filters" Menu







10. The "Filters" Menu

10.1. Introduction to the "Filters" Menu

Figure 16.241. The "Filters" menu



In GIMP terminology, a *filter* is a plug-in that modifies the appearance of an image, in most cases just the active layer of the image. Not all of the entries in this menu meet that definition, however; the word "filter" is often misused to mean any plug-in, regardless of what it does. Indeed, some of the entries in this menu do not modify images at all.

With the exception of the top three items of the Filters menu, all of the entries are provided by plug-ins. Each plug-in decides for itself where it would like its menu entry to be placed. Therefore, the appearance of this menu can be completely different for each user. In practice, though, the appearance does not vary very much, because most plug-ins come with GIMP when it is installed, and of course they are always in the same places in the menu. Plug-ins are not restricted to just the Filters menu: a plug-in can place entries in any menu. Indeed, a number of GIMP's basic functions (for example, Semi-flatten in the Layer menu) are implemented by plug-ins. But the Filters menu is the default place for a plug-in to place its menu entries.

For general information on plug-ins and how to use them, see the section on <u>Plug-ins</u>. You can find information on the filters that are provided with GIMP in the <u>Filters</u> chapter. For filters you install yourself, please refer to the information which came with them.

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9. The "Tools" Menu





10.2. Repeat Last

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10.2. Repeat Last



10. The "Filters" Menu



10.2. Repeat Last

The Repeat Last command performs the action of the most recently executed plug-in again, using the same settings as the last time it was run. It does not show a dialog or request confirmation.



Note

Please note that this command repeats the most recently executed *plug-in*, regardless of whether it is in the Filters menu or not.

10.2.1. Activating the Command

- You can access this command from the main menu through Filters → Repeat filter,
- or by using the keyboard shortcut Ctrl + F.







10. The "Filters" Menu



10.3. Re-Show Last

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10.3. Re-Show Last



10. The "Filters" Menu



10.3. Re-Show Last

The Re-Show Last command shows the dialog of the most recently executed plug-in. Unlike the "Repeat Last" command, which does not display a dialog, the "Re-Show Last" command displays a dialog window, if the plug-in has one. It is displayed with the settings you used the last time you ran the plug-in (assuming that the plug-in follows the GIMP programming conventions).



Note

Please note that this command repeats the most recently executed *plug-in*, regardless of whether it is in the Filters menu or not.



Tip

When you are using a plug-in, especially one that does not have a preview window, you may very well have to adjust the parameters several times before you are satisfied with the results. To do this most efficiently, you should memorize the shortcuts for Undo and Re-Show Last: Ctrl + Z followed by Ctrl + Shift + F.

10.3.1. Activating the Command

- You can access this command from the main menu through Filters \rightarrow Re-Show filter,
- or by using the keyboard shortcut | Ctrl |+ | Shift |+ | F |.











3/29/25, 9:26 AM 10.4. Reset All Filters

10.4. Reset All Filters



10. The "Filters" Menu



10.4. Reset All Filters

Normally, each time you run an interactive plug-in, its dialog is displayed with all of the settings initialized to the ones you used the last time you ran it. This may be a problem if you made a mistake setting the values and you can't remember what they were originally. One way to recover is to exit GIMP and start again, but the Reset all Filters command is a slightly less drastic solution: it resets the values for *all* plug-ins to their defaults. Because it is a dramatic step, it asks you to confirm that you really want to do it. Be careful: you cannot undo this command.

10.4.1. Activating the Command

You can access this command from the main menu through Filters → Reset all Filters.







10.3. Re-Show Last



10.5. The "Development" Submenu

10.5. The "Development" Submenu



10. The "Filters" Menu



10.5. The "Development" Submenu

This submenu contains development related items. Useful when you are developing plug-ins.

10.5.1. Activating the Submenu

You can access this command from the main menu through Filters → Development.

10.5.2. Categories

- Section 10.6, "The "Python-Fu" Submenu"
- Section 10.7, "The "Script-Fu" Submenu"
- Plug-In Examples: the commands in this submenu start example plug-ins in several programming languages.
 They can be used as a starting point when you want to develop your own plug-in.
 At the moment example plug-ins are available for C, Lua, Python, Vala, Script-Fu (Scheme) and JavaScript.
 Note that JavaScript plug-ins are currently not available on Windows.







10.4. Reset All Filters



10.6. The "Python-Fu" Submenu

10.6. The "Python-Fu" Submenu



10. The "Filters" Menu



10.6. The "Python-Fu" Submenu

By default this submenu just contains the Python-Fu console.

Python-Fu is a set of Python modules that act as a wrapper to libgimp allowing the writing of plug-ins for GIMP.

10.6.1. Activating the Submenu

You can access this command from the main menu through Filters → Development → Python-Fu.

10.6.2. The Python-Fu Console

The Python-Fu console is a dialog window running a "Python shell" (a Python interpreter in interactive mode). This console is set up to make use of the internal GIMP library routines of *libgimp*.

You can use the Python-Fu console to interactively test Python commands.

The console consists of a large scrollable main window for input and output, where you can type Python commands. When you type in a Python command and then press the **Enter** key, the command is executed by the Python interpreter. The command's output as well as its return value (and its error message, if any) will be displayed in the main window.

Figure 16.242. The Python-Fu Console

```
Save
        Python Console
                          Close
                                    Browse...
                                                  Clear
GIMP 3.0.0 Python Console
Python 3.13 (Aug 6 2024, 00:00:00) [GCC 14.1.1 20240701]
>>> 1 + 1
2
>>> a = 2
>>> b = 3
>>> a * b
>>> spam() and eggs()
>>> print("Version: %s" % str(Gimp.version()))
Version: 3.0.0
>>> type(Gimp)
<class 'gi.module.IntrospectionModule'>
>>> import pdb
>>> type(pdb)
<class 'module'>
>>> help(Gimp)
Help on IntrospectionModule in qi.repository object:
qi.repository.Gimp = class IntrospectionModule(builtins.object)
di.repository.Gimp(namespace.version=None)
```

The Python-Fu Console Buttons

Save

This command lets you save the content of the main window, that is the Python-Fu console input and output (including the ">>>" prompt).

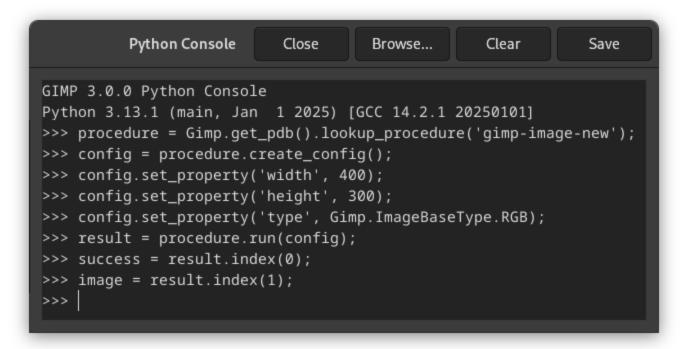
Clear

When you click on this button, the content of the main window will be removed. Note that you can't get back the removed content using the Save command.

Browse

When clicked, the procedure browser pops up, with an additional button Apply.

When you press this Apply button in the procedure browser, a call to the selected procedure will be pasted into the console window as a Python command:



Applied PDB procedure

Now you just have to replace the parameter names (here: "width", "height", and "type") with actual values, e.g.

```
config.set_property('width', 400)
config.set_property('height', 300)
config.set_property('type', Gimp.ImageBaseType.RGB)
```

Then press | **Enter** | to execute the command.

You can (and should!) use the constants you find in the description of the procedure's parameters, for example "RGB-IMAGE" or "OVERLAY-MODE". But note that you have to replace hyphens ("-") with underscores ("_"): RGB_IMAGE, OVERLAY_MODE.



Tip

Python-Fu is not limited to just calling procedures from the <u>PDB</u> (GIMP procedural database). To create a new image object like in the example above, you can also type

image = gimp.Image(width, height, type)

(with actual values for "width", "height", and "type").

Close

Pressing this button closes the console.





10.7. The "Script-Fu" Submenu

10.7. The "Script-Fu" Submenu



10. The "Filters" Menu



10.7. The "Script-Fu" Submenu

This submenu contains some Script-Fu commands, especially the Script-Fu console. <u>Script-Fu</u> is a language for writing scripts, which allow you to run a series of GIMP commands automatically.

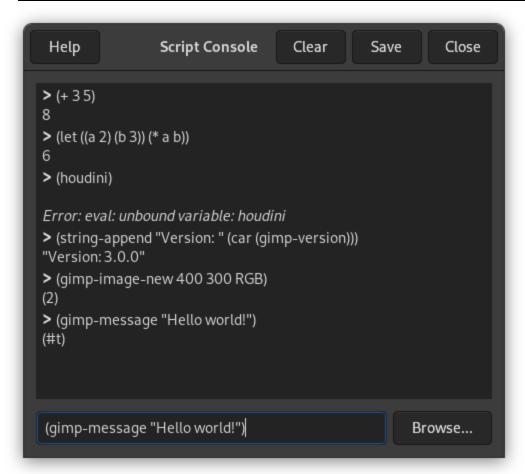
10.7.1. Activating the Submenu

You can access this command from the main menu through Filters \rightarrow Development \rightarrow Script-Fu.

10.7.2. Script-Fu Console

The Script-Fu console is a dialog window where you can interactively test Scheme commands. The console consists of a large scrollable main window for output and a text box at the bottom to enter Scheme commands. When you type a Scheme statement and then press the **Enter** key, the command and its return value will be displayed in the main window.

Figure 16.243. The Script-Fu Console



You will find more information about <u>Scheme</u> and examples how to use the <u>Script-Fu console</u> in <u>Section 3, "A Script-Fu Tutorial"</u>.

The Script-Fu Console Buttons

Browse

The Browse button is next to the Scheme commands text box. When clicked, the <u>procedure browser</u> window opens with an additional Apply button.

Select a <u>PDB</u> procedure from the list and press the Apply button. The selected procedure and its parameter names will be pasted into the text box of the Script Console.

Now you just have to replace the parameter names after the procedure name with actual values. Then you can call the procedure by pressing **Enter**.

Close

Pressing this button closes the Script-Fu console.

Clear

When you click on this button, the content of the main window will be removed. Note that you can't get back the removed content using the Save command.

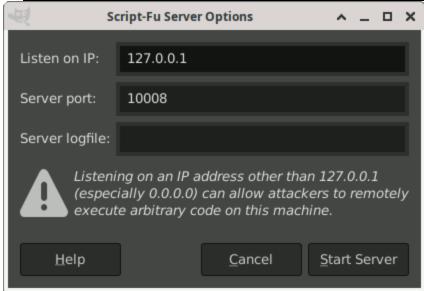
Save

This command lets you save the content of the main window, that is the Script-Fu console output (including the ">"-characters).

10.7.3. Start Server

This command will start a server, which reads and executes Script-Fu (Scheme) statements you send it via a specified port.

Figure 16.244. The Script-Fu Server Options



Listen on IP

The IP address the Script-Fu server will listen on. This is usually 127.0.0.1 (also known as localhost). Only change this if you know what you are doing.

Server Port

The port number where the Script-Fu server will listen. It is possible to start more than one server, specifying different port numbers, of course.

Server Logfile

Optionally you can specify the name of a file the server will use to log informational and error messages. If no file is specified, messages will be written to stdout.

The Script-Fu Server Protocol

The protocol used to communicate with the Script-Fu server is very simple:

• Every message (Script-Fu statement) of length L sent to the server has to be preceded with the following 3 bytes:

Table 16.1. Header format for commands

Byte #	Content	Description
0	0x47	Magic byte ('G')
1	L div 256	High byte of L
2	L mod 256	Low byte of L

• Every response from the server (return value or error message) of length L will be preceded with the following 4 bytes:

Table 16.2. Header format for responses

Byte #	Content	Description
0	0x47	Magic byte ('G')
1	error code	0 on success, 1 on error
2	L div 256	High byte of L
3	L mod 256	Low byte of L



Tip

If you don't want to get your hands dirty: there is a Python script named servertest.py shipped with the GIMP source code, which you can use as a simple command line shell for the Script-Fu server.







10.6. The "Python-Fu" Submenu



11. "Windows" Menu

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11. "Windows" Menu



Chapter 16. Menus

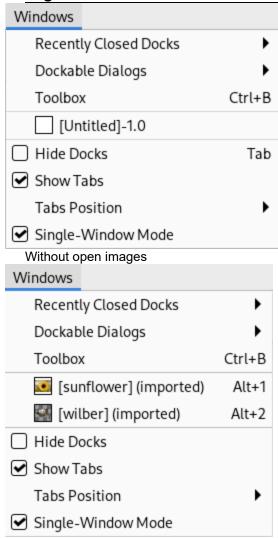


11. "Windows" Menu

This menu allows you to manage GIMP windows dialogs:

The "Windows" menu name is not well adapted to the new single-window mode. Nevertheless, its functions concern multi and single modes. Its display may vary according presence or absence of images and docks:

Figure 16.245. Contents of the "Windows" Menu



With open images

- Recently Closed Docks: this command opens the list of the docks you have closed recently. You can reopen them by clicking on their name. Please note that isolated windows are not concerned. For more information about docks, please see <u>Dialogs and Docking</u>.
- 2. **Dockable Dialogs**: this command opens the list of dockable dialogs. Please refer to <u>Section 2.3, "Dialogs and Docking"</u>.
- 3. **Toolbox**: clicking on this command or using the **Ctrl** + **B** shortcut, raises the toolbox usually together with the tool options dock. Note that in single-window mode this usually doesn't have any effect since the toolbox is part of the main window.
- 4. The list of open image windows: clicking on an image name, or using the Alt + Number of the image shortcut, makes the image active.

3/29/25, 9:28 AM 11. "Windows" Menu

5. The list of open docks: in this list, docks are named with the name of the active dialog in this dock. Clicking on a dock name raises this dock. Note that in single-window mode only docks that are not part of the main window will be shown here.

- 6. **Hide Docks** (Tab): this command hides all docks (usually to the left and right of the image), leaving the image window alone. The command status is kept on quitting GIMP and will be in the same state when GIMP starts.
- 7. **Show Tabs**: in single-window mode this command changes whether or not to show the tabs with all opened images. By default the tab bar is shown, but you can hide it if you don't need it and want to use the extra screen space.
 - In multi-window mode this command is disabled.
- 8. **Tabs Position**: In single-window mode you can use this command to choose the position of the tab bar that shows the loaded images. By default the tab bar is located at the Top, but you can change this to show it at the Bottom, Left, or Right.

 In multi-window mode this command is disabled.
- 9. **Single Window Mode**: when enabled, GIMP is in a single window mode. Please see <u>Single Window Mode</u>.



1

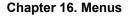


10.7. The "Script-Fu" Submenu



12. The "Help" Menu

12. The "Help" Menu



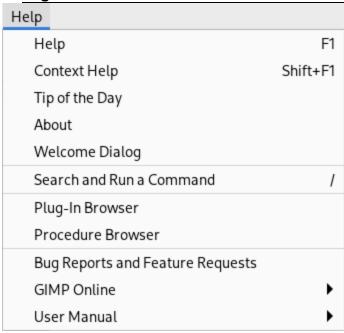




12. The "Help" Menu

12.1. Introduction to the "Help" Menu

Figure 16.246. Contents of the "Help" menu



The Help menu contains commands that assist you while you are working with GIMP.



Note

Besides the commands described here, you may also find other entries in the menu. They are not part of GIMP itself, but have been added by third-party plug-ins. You can find information about the functionality of a plug-in by referring to its documentation.



11. "Windows" Menu





12.2. Help

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12.2. Help



12. The "Help" Menu



12.2. Help

The Help command displays the GIMP User Manual in your default browser.

You can choose whether you prefer to use a locally installed copy of the manual, or the online version, in the <u>Help System</u> section of the Preferences dialog.



Note

If the help does not seem to work when you have selected local help, please verify that the "GIMP User Manual" is installed on your system. See the link above for more information.

12.2.1. Activating the Command

• You can access this command from the main menu through Help \rightarrow Help ($\boxed{\mathbf{F1}}$).







12. The "Help" Menu



12.3. Context Help

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12.3. Context Help



12. The "Help" Menu



12.3. Context Help

The Context Help command makes the mouse pointer context-sensitive and changes its shape to a "?". You can then click on a window, dialog or menu entry and GIMP displays help about it, if it is available. You can also access context help at any time by pressing the F1 key while the mouse pointer is over the object you would like help about.

12.3.1. Activating the Command

- You can access this command from the main menu through Help \rightarrow Context Help,
- or by using the keyboard shortcut Shift + F1.







12.2. Help



12.4. User Manual

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12.4. User Manual



12. The "Help" Menu



12.4. User Manual

Figure 16.247. The "User Manual" submenu of the Help menu

1 19 a1 5 1 5 1 2 + 7 1 1 11 c		manaar cabmena er the nerp n
Help		
Help	F1	
Context Help	Shift+F1	
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About		Using Paths
		Working with Digital Camera Photos

The User Manual command displays a submenu which lists links to several parts of the user manual. Clicking on one of them will open the desired user manual topic. Depending on your help preferences this will open either the local or online user manual, either in your browser or in GIMP's own help browser.



12.3. Context Help







12.5. Tip of the Day

3/29/25, 9:29 AM 12.5. Tip of the Day

12.5. Tip of the Day



12. The "Help" Menu



12.5. Tip of the Day

The Tip of the Day dialog contains useful tips to help you gain a better understanding of some of the subtle points of using GIMP. The tips often suggest ways of doing something that are much easier or more efficient than more obvious approaches.

Some tips contain a Learn more link to the corresponding GIMP manual page.

12.5.1. Activating the Command

You can access this command from the main menu through Help → Tip of the Day.







12.4. User Manual



12.6. Welcome Dialog

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12.6. Welcome Dialog



12. The "Help" Menu



12.6. Welcome Dialog

The Welcome Dialog command opens the Welcome Dialog. See there for more information.

12.6.1. Activating the Command

You can access this command from the main menu through Help → Welcome Dialog.











12.7. Search and Run a Command

12.7. Search and Run a Command



12. The "Help" Menu



12.7. Search and Run a Command

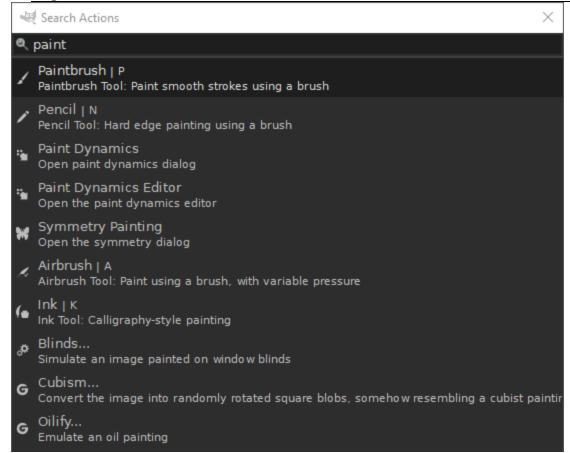
The Search and Run a Command displays a dialog where you can search for all commands that are available in GIMP, even those that are not part of the menu. It is a quick and easy way to start a command if you don't know exactly where to find it.

12.7.1. Activating the Command

You can access this command from the main menu through Help → Search and Run a Command.

12.7.2. Description of the dialog

Figure 16.248. "Search and Run a Command" window



When you have not entered any search text yet, this window will be empty. As soon as you start typing, GIMP will show all commands that contain the search phrase you entered.

When you see the command that you are looking for in the list, you can double click on that command to start it.







12.8. Plug-In Browser

12.6. Welcome Dialog

4

12.8. Plug-In Browser



12. The "Help" Menu



12.8. Plug-In Browser

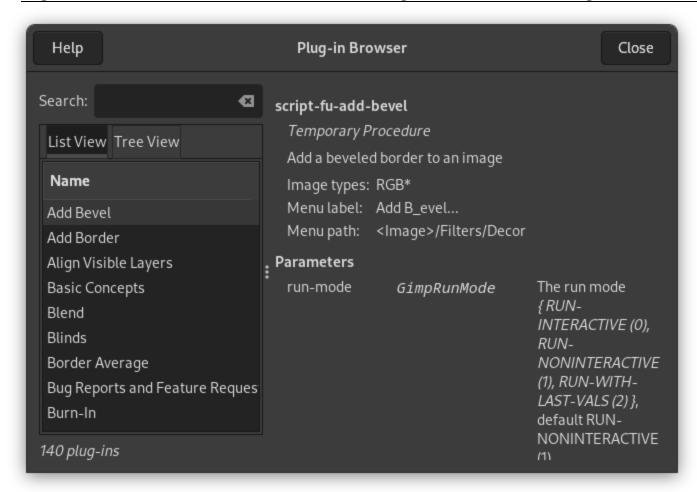
The Plug-In Browser command displays a dialog window which shows all of the extensions (plug-ins) which are currently loaded in GIMP, both as a list and as a hierarchical tree structure. Since many of the filters are actually plugins, you will certainly see many familiar names here. Please note that you do not run the extensions from this dialog window. Use the appropriate menu entry to do that instead. For example, you can run filter plug-ins by using the Filter command on the main menu.

12.8.1. Activating the Command

You can access this command from the main menu through Help → Plug-in Browser.

12.8.2. Description of the "Plug-In Browser" dialog window

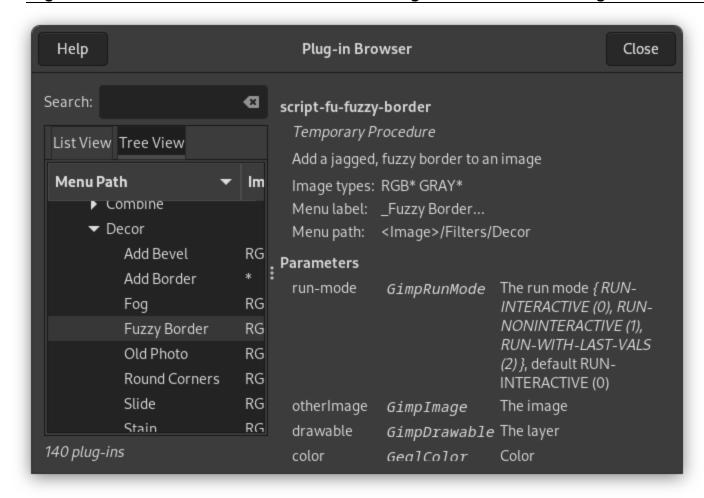
Figure 16.249. The list view of the "Plug-In Browser" dialog window



The figure above shows the list view of the Plug-In Browser. You can click on the name of a plug-in in the scrolled window to display more information about it. Select the List View by clicking on the tab at the top of the dialog.

You can search for a plug-in by name by entering part or all of the name in the Search: text box. The left part of the dialog then displays the matches found.

Figure 16.250. The tree view of the "Plug-In Browser" dialog window



The figure above shows the tree view of the Plug-In Browser. You can click on the name of a plug-in in the scrolled window to display more information about it. You can click on the arrowheads to expand or contract parts of the tree. Select the Tree View by clicking on the tab at the top of the dialog.

You can search for a plug-in by name by entering part or all of the name in the Search: text box. The left part of the dialog then displays the matches found.



Note

Not everything in these huge dialog windows is visible at the same time. Use the scroll bars to view their content.



12.7. Search and Run a Command





Report a bug in GIMP Report a documentation error

12.9. The Procedure Browser

12.9. The Procedure Browser



12. The "Help" Menu



12.9. The Procedure Browser

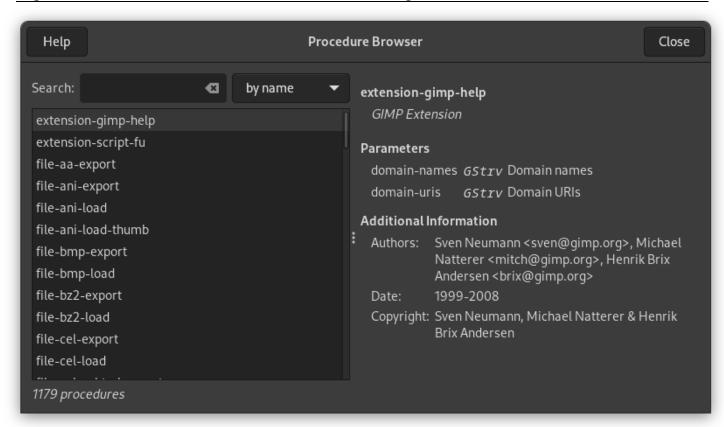
The Procedure Browser command displays the procedures in the <u>PDB</u>, the Procedure Database. These procedures are functions which are called by the scripts or plug-ins.

12.9.1. Activating the Command

You can access this command from the main menu through Help → Procedure Browser.

12.9.2. Description of the "Procedure Browser" dialog window

Figure 16.251. The "Procedure Browser" dialog window



The figure above shows the Procedure Browser dialog window. If you click on an item in the scrolled list on the left, information about it is displayed on the right. You can also search for a specific procedure by querying the procedural database with a regular expression on Search: text box:

by name

Shows a list of procedures which have code names that contain the part of the name you entered.

by description

Shows a list of procedures which have blurbs that contain the word you entered.

by help

Shows a list of procedures which have additional information text that contains the word you entered.

by authors

Shows a list of procedures created by the author whose name contains the word you entered.

by copyright

Shows a list of procedures whose copyright are hold by someone whose name contains the word you entered.

by date

Shows a list of procedures which have a date of a year which matches the year you entered.



Note

This query is processed with text but not date value, so you cannot find some procedure entries even if their date contains the year you entered. For example, a procedure dated 2000-2005 does not match if you search procedures with 2001, but it matches with 2000 or 2005.

by type

Shows a list of procedures which have one of four types: "Internal GIMP procedure", "GIMP Plug-In", "GIMP Extension", or "Temporary Procedure".



1



12.8. Plug-In Browser



12.10. GIMP online

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12.10. GIMP online

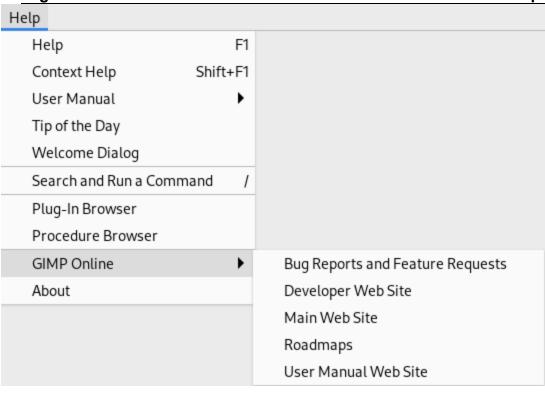


12. The "Help" Menu



12.10. GIMP online

Figure 16.252. The "GIMP Online" submenu of the Help menu



The GIMP online command displays a submenu which provides access to several website links that have to do with various aspects of GIMP. You can click on one of the menu items and your web browser will try to connect to the URL.

Bug Reports and Feature Requests

If you encounter an error or problem when using GIMP, or if you think that GIMP could be improved, then you can use this command to open the web page of our issue tracker.

The issue tracker is the best place to let us know about bugs and feature requests. Please check first if there is already an existing issue that describes your problem. If you open a new issue, please make sure to include all relevant information, like your exact GIMP version, your Operating System, a screenshot, or a sample image.

Developer Web Site

The developer website is the place to start if you are interested in building GIMP yourself and helping out with development.

Main Web Site

The main GIMP website.

Roadmaps

This website gives a rough overview of the planned development of GIMP.

User Manual Web Site

The user manual website gives access to the online user manuals in all available languages, links to quickreference guides, Windows installers to be able to view the manual offline, and links to source releases.







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12.9. The Procedure Browser

<u>~</u>

12.11. About

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12.11. About



12. The "Help" Menu



12.11. About

The About command shows the About window, which displays information about the version of GIMP you are running and the many authors who wrote it.

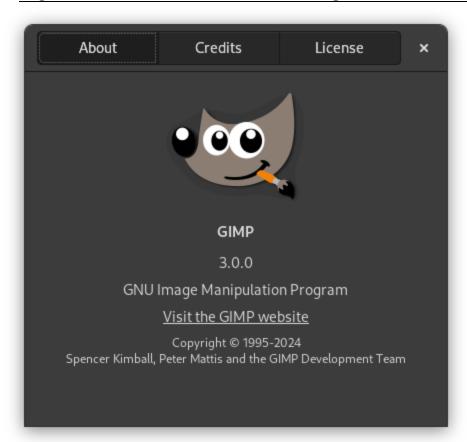
This dialog also shows the Check for updates button that you can use to manually check whether you have the latest version of GIMP. If you have enabled automatic update checking, then this box may show you that a new version of GIMP is available. In that case the button will allow you to go to the newest download for GIMP.

12.11.1. Activating the "About" Command

You can access this command in the main menu through Help → About

12.11.2. Description of the dialog window

Figure 16.253. The "About" dialog window



The Credits button shows a list of people that have contributed to GIMP as developers, documenters and artists. The License button explains how to get the license.







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12.10. GIMP online

4

Report a bug in GIMP Report a documentation error

Chapter 17. Filters

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Chapter 17. Filters



Part III. Function Reference



Chapter 17. Filters

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1. Introduction

A filter is a special kind of tool designed to take an input layer or image, apply a mathematical algorithm to it, and return the input layer or image in a modified format. GIMP uses filters to achieve a variety of effects and those effects are discussed here.

The filters are divided into several categories:

- Section 3, "Blur Filters"
- Section 4, "Enhance Filters"
- Section 5, "Distort Filters"
- Section 6, "Light and Shadow Filters"
 Section 7, "Noise Filters"
- Section 8, "Edge-Detect Filters"
- Section 9, "Generic Filters"
- Section 10, "Combine Filters"
- Section 11, "Artistic Filters"
- Section 12, "Decor Filters"
- Section 13, "Map Filters"
- Section 14, "Rendering Filters"
 Section 15, "Web Filters"
- Section 16, "Animation Filters"



12.11. About

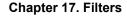




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2. Common Features

2. Common Features



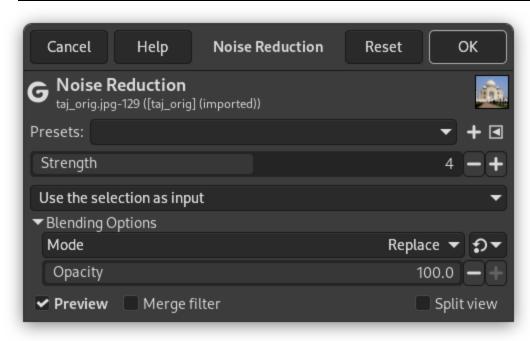




2. Common Features

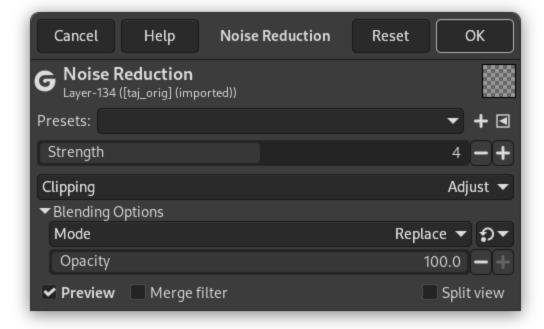
Most filters are GEGL filters. GEGL is the image processing library used by GIMP. These filters have several options in common, some of which are only shown under certain conditions.

Figure 17.1. Common Options of GEGL Filters



When a selection is active

(Note that Strength is not a common option but an option of the depicted Noise Reduction filter.)



(Note that Strength is not a common option but an option of the depicted Noise Reduction filter.)

Presets

Filter presets are similar to tool presets, in that you can save your favorite settings and recall them when needed. They consist of:

- A drop-down list that shows the current preset and lets you choose a different one.
- An icon to save the current settings as a named preset.
- An icon that opens a menu with options to import presets from a file, export the current presets to a file, and manage presets.

Input Type



Note

The input type drop-down list is only visible when a selection is active.

 Use the selection as input If this option is selected, the filter only uses pixels inside the selection as input for the filter.



• Use the entire layer as input If this option is selected, the input of the filter is the entire layer. The output will only affect the selection. The layer outside the selection remains unchanged.



Clipping



Note

The clipping drop-down list is only visible when the current layer has an alpha channel, and no selection is active.

This setting determines what to do when the result of this filter is larger than the original layer.

- Adjust The layer will be automatically resized as necessary when the filter is applied. This is the default.
- Clip The result will be clipped to the layer boundary.

Blending Options

When you expand this option by clicking the +, you can choose the blend Mode to be used when applying the filter, and the Opacity. These work the same as the Layer Mode blending options.

Preview

When this option is enabled (default), changes in the filter settings are directly displayed on canvas. They are not applied to the image until you click the OK button.

3/29/25, 9:32 AM 2. Common Features

Merge Filter

By default, GEGL filters are applied non-destructively as <u>layer effects</u>, which means they can still be changed at a later time. When you want to apply the filter immediately to the layer itself, you can enable this option.

This option is remembered, so you only need to change it once if you prefer to always use filters destructively.

Split view

When this option is enabled, the view of the image is divided in two parts. On the left side it shows the effect of the filter applied, and on the right side it shows the image without filter.



Note

You can click-and-drag the line that divides the preview to move it, and Ctrl -click to make the line horizontal, or to switch it back to vertical.







Chapter 17. Filters



3. Blur Filters

3/29/25, 9:32 AM 3 Blur Filters

3. Blur Filters



Chapter 17. Filters



3. Blur Filters

3.1. Introduction

Figure 17.2. Original for demo



Blur filters blur images, or parts of them, in various ways. If there is a selection, only the selected parts of an image will be blurred. There may, however, be some leakage of colors from the unblurred area into the blurred area. To help you pick the one you want, we will illustrate what each does when applied to the image shown at right. These are, of course, only examples: most of the filters have parameter settings that allow you to vary the magnitude or type of blurring.

This category describes the following filters:

- Section 3.2, "Focus Blur"
- Section 3.3, "Gaussian Blur"
- Section 3.4, "Lens Blur"
- Section 3.5, "Mean Curvature Blur"
- Section 3.6, "Median Blur"
- Section 3.7, "Pixelize"
- Section 3.8, "Selective Gaussian Blur"
- Section 3.9, "Variable Blur"
- Section 3.10, "Circular Motion Blur"
- Section 3.11, "Linear Motion Blur"
- Section 3.12, "Zoom Motion Blur"
 Section 3.13, "Tileable Blur"

Figure 17.3. Gaussian blur (radius 10)



The most broadly useful of these is the Gaussian blur. (Don't let the word "Gaussian" throw you: this filter makes an image blurry in the most basic way.) It has an efficient implementation that allows it to create a very blurry blur in a relatively short time.

Figure 17.4. Selective blur

3/29/25, 9:32 AM 3. Blur Filters



The Selective Blur filter allows you to set a threshold so that only pixels that are similar to each other are blurred together. It is often useful as a tool for reducing graininess in photos without blurring sharp edges. (In the example, note that the graininess of the background has been reduced.) The implementation is much slower than a Gaussian blur, though, so you should not use it unless you really need the selectivity.

Figure 17.5. Pixelize



The Pixelize filter produces the well-known "Abraham Lincoln" effect by turning the image into a set of large square pixels. (The Oilify filter, in the Artistic Filters group, has a similar effect, but with irregular blobs instead of perfectly square pixels.)



Note

You can find a nice explanation of the Abraham Lincoln effect at [BACH04]. You will see the Salvador Dali's painting "Gala Contemplating the Mediterranean Sea" turning to an Abraham Lincoln's portrait when looking at it from a distance.

The Motion Blur filter is divided in Circular, Linear, and Zoom.

Figure 17.6. Circular Motion Blur filter



The Circular Motion Blur filter blurs in a rotational direction around a center that you can set.

Figure 17.7. Linear Motion Blur filter



The Linear Motion Blur filter blurs in a direction that you can set.

Figure 17.8. Zoom Motion Blur filter

3/29/25, 9:32 AM 3. Blur Filters



The Zoom Motion Blur filter blurs in a radial direction around a center that you can set. Finally, the Tileable Blur filter is really the same thing as a Gaussian blur, except that it wraps around the edges of an image to help you reduce edge effects when you create a pattern by tiling multiple copies of the image side by side.

+

2. Common Features





3.2. Focus Blur

3/29/25, 9:33 AM 3.2. Focus Blur

3.2. Focus Blur







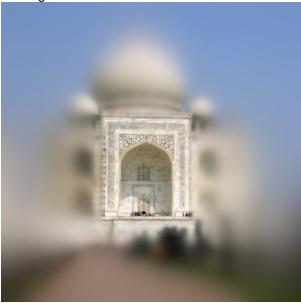
3.2. Focus Blur

3.2.1. Overview

Figure 17.9. The Focus Blur filter



Original



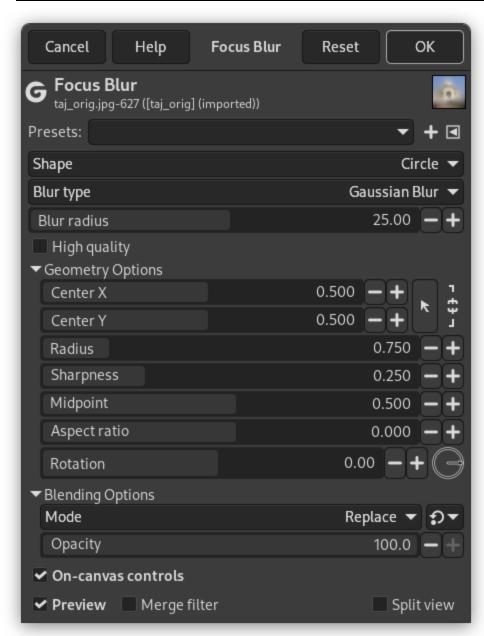
Focus Blur applied

Focus blur creates a blur in all directions around a focal point. The default focal point is the center of the layer or selection. You can change this focal point by dragging the center point. All other points and lines can also be dragged to adjust the shape and focus area of the image.

3.2.2. Options

3/29/25, 9:33 AM 3.2. Focus Blur

Figure 17.10. Focus Blur filter dialog options with Geometry Options expanded



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

Shape

Here, you can select the shape used for creating the focus blur. The choices are Circle, Square, Diamond, Horizontal and Vertical.

Blur type

The type of blur to use. The choices are Gaussian Blur and Lens Blur.

Blur radius

The size of the out-of-blur radius.

High quality (only available for Gaussian Blur)

Generate more accurate and consistent output. This is slower.

Highlight factor (only available for Lens Blur)

Relative highlight strength.

3/29/25, 9:33 AM 3.2. Focus Blur

Highlight threshold (only available for Lens Blur)

Here you can set the minimum and maximum values for highlighting. It can be set either by dragging the black and white triangles, or inputting exact values into the number entry fields.

Geometry Options

These geometry related options can all be changed by using the visual on-canvas controls. In case you need more fine-grained control, they can be set manually here.

Center X, Center Y

Specifies the center X and Y position of the focus blur.

Radius

The radius of the outer focus region. Visible as the outer continuous line.

Sharpness

The radius of the inner focus region. Visible as the inner continuous line.

Midpoint

The focus transition midpoint. Shown as a dashed line. The area from the inner (sharpness) line to the midpoint, is where the focus area turns into the blurred area.

Aspect ratio

This controls the aspect ratio.

Rotation

This controls the rotation in degrees. You can either use the circular control or enter numbers.

On-canvas controls

This option (default) allows you to modify blur settings directly on canvas, for easier visual tweaking of blur settings. It displays lines in the selected shape with points on it. Both the lines and the points can be dragged with a mouse to change the focus center, the blurring area and other settings that are also available in the Geometry Options.







3. Blur Filters



3.3. Gaussian Blur

3/29/25, 9:33 AM 3.3. Gaussian Blur

3.3. Gaussian Blur





3.3. Gaussian Blur

3.3.1. Overview

Figure 17.11. Example for the "Gaussian Blur" filter



Original



Blur applied

The Gaussian Blur plug-in acts on each pixel of the active layer or selection, setting its Value to the average of all pixel Values present in a radius defined in the dialog. A higher Value will produce a higher amount of blur. The blur can be set to act in one direction more than the other by clicking the Chain Button so that it is broken, and altering the radius. GIMP supports two implementations of Gaussian Blur: FIR and IIR. They both produce the same results, but each one can be faster in some cases. They are complemented by the default Auto setting, that automatically picks the optimal choice.

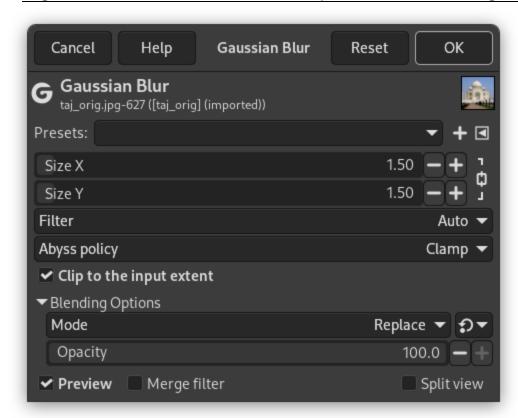
3/29/25, 9:33 AM 3.3. Gaussian Blur

3.3.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Blur \rightarrow Gaussian Blur....

3.3.3. Options

Figure 17.12. "Gaussian" filter parameters settings



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Size X. Size Y

Here you can set the blur intensity. By altering the ratio of horizontal to vertical blur, you can give the effect of a motion blur.

Filter

Auto: Try to select the best filter automatically. In most cases this default is best left alone.

FIR: stands for "Finite Impulse Response".

IIR: stands for "Infinite Impulse Response".

Abyss policy

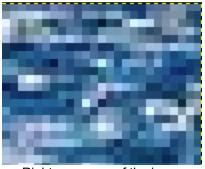
Abyss policy (border management) is treated with Abyss policy.

Clip to the input extent

Should the output extent be clipped to the input extent: this option removes unwanted pixels created on borders by blurring.

Figure 17.13. Example

3/29/25, 9:33 AM 3.3. Gaussian Blur



Right-up corner of the image, zoom x800

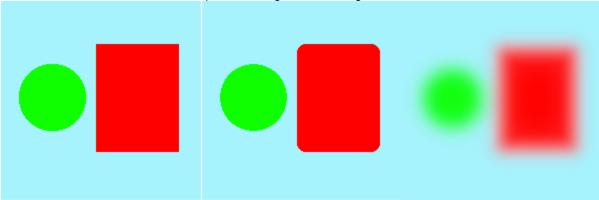


"Clip to the input extent" unchecked



"Clip to the input extent" checked

The Gaussian Blur filter doesn't preserve edges in the image:



Left: Original image

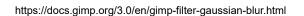
Middle: Median Blur filter applied Right: Gaussian Blur filter applied



3.2. Focus Blur



3.4. Lens Blur



3/29/25, 9:33 AM 3.4. Lens Blur

3.4. Lens Blur





3.4. Lens Blur

3.4.1. Overview

Figure 17.14. The Lens Blur filter



Original



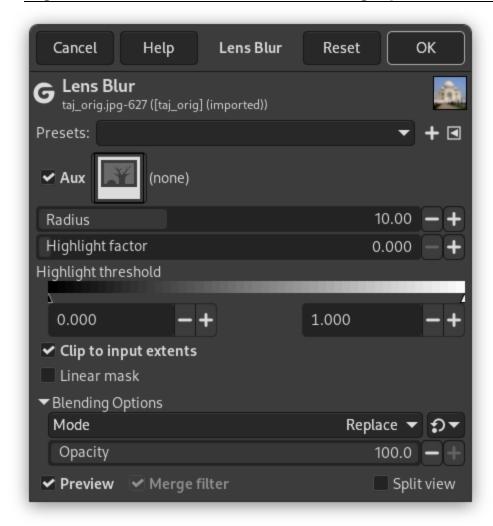
Lens Blur applied

Lens blur simulates an out-of-focus camera picture.

3.4.2. **Options**

3/29/25, 9:33 AM 3.4. Lens Blur

Figure 17.15. Lens Blur filter dialog options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

Aux

This allows you to select an additional input layer or channel, that will be used to compute the lens blur. Clicking on the square picture allows you to select from a list of available layers and channels. The Aux will only be used if this setting is enabled.

Radius

The size of the blur radius.

Highlight factor

Relative highlight strength.

Highlight threshold

Here you can set the minimum and maximum values for highlighting. It can be set either by dragging the black and white triangles, or inputting exact values into the number entry fields.

Clip to input extents

If enabled, this limits the output to the input extents.

Linear mask

If enabled, use linear mask values.







3/29/25, 9:33 AM 3.4. Lens Blur

3.3. Gaussian Blur

4

Report a bug in GIMP Report a documentation error

3.5. Mean Curvature Blur

3.5. Mean Curvature Blur



3. Blur Filters



3.5. Mean Curvature Blur

3.5.1. Overview

Regularize geometry at a speed proportional to the local mean curvature value: this filter uses the mean curvature algorithm to blur the image preserving edges.

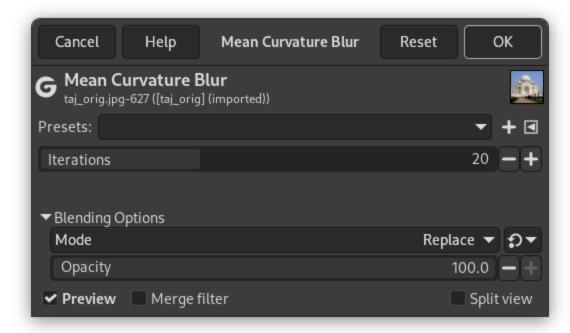
The Mean Curvature algorithm is described on Wikipedia.

3.5.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Blur \rightarrow Mean Curvature Blur....

3.5.3. **Options**

Figure 17.16. "Mean Curvature Blur" filter parameters



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Iterations

Increasing Iterations increases blur.

3.5.4. Examples



Original image



Iterations = 4
Mean Curvature Blur can be used to denoise an image:

Figure 17.17. Mean Curvature Blur to denoise



Original image



Iterations = 9







3.4. Lens Blur



3.6. Median Blur

3.6. Median Blur



3. Blur Filters



3.6. Median Blur

3.6.1. Overview

While the "Gaussian" blur filter calculates the mean of the neighboring pixels, the "Median" blur filter calculates the median:

Figure 17.18. Calculating Median

223	186	114									
204	161	106	106	114	138	161	186	194	204	219	223
219	194	138									

A 3×3 neighborhood. Values in ascending order. Median surrounded in red.

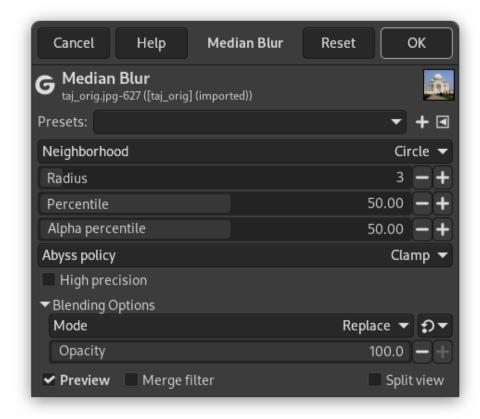
This calculation does not create a new value, and an unrepresentative pixel in the neighborhood will not affect the result. So, the filter preserves edges and rounds corners. It is used to reduce noise, especially salt and pepper noise, and delete scratches on photographs.

3.6.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Blur \rightarrow Median Blur....

3.6.3. Options

Figure 17.19. "Median" filter parameters



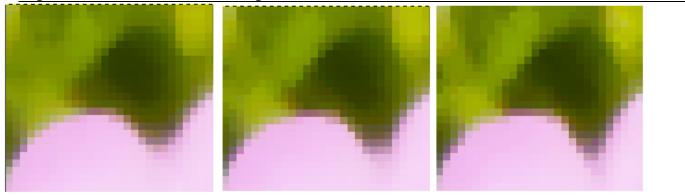
Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Neighborhood

The shape of the neighborhood. Three options: Square, Circle (default), Diamond. Differences are subtle and not predictable: experiment, on-canvas editing makes this easy.

Figure 17.20. "Median" Neighborhood

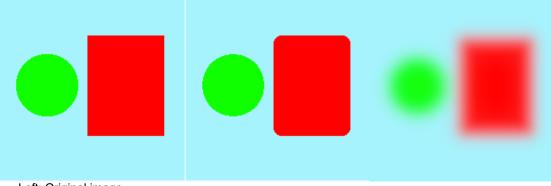


Radius=3. Left: Square. Middle: Circle. Right: Diamond.

Radius

The radius of the neighborhood. Increasing radius increases blur. Contrary to the "Gaussian" filter, edges are not blurred. Corners are rounded and convex surfaces are eroded.

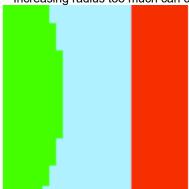
Figure 17.21. "Median" blur vs "Gaussian" blur

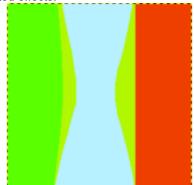


Left: Original image

Middle: Median Blur filter applied Right: Gaussian Blur filter applied

Increasing radius too much can create unwanted effects:





Left: Origin Right: Radius=100

Percentile

By default, the Median Blur filter finds the median value at the neighborhood of each pixel. In spite of its name, the filter can actually find *any* arbitrary percentile, not just the median (i.e., the 50th percentile). The "Percentile" parameter controls the percentile used for the color components. Lower values shift the image toward darker tones and higher values toward brighter ones.







Left: Origin

Middle: Percentile=0. Image is darker. Stems are enlarged but sharp.

Right: Percentile=100. Image is brighter and much blurred.

Alpha Percentile

To see the effect of this parameter, you need an image with transparency. If the alpha channel is opaque everywhere, the result will also be fully opaque, regardless of the percentile.

Lower values for the "Alpha percentile" parameter shift the image toward more transparency, and higher values shift the image toward more opacity, where a value of 50% is balanced. Roughly speaking, values less than 50% make the opaque regions of the image smaller, while values greater than 50% make the opaque regions of the image larger.



Left: Origin. The image has an alpha channel. A circle is transparent. Middle: Percentile=0%. Transparent circle is enlarged.

Right: Alpha percentile=100%. Transparent circle is reduced.

Abyss policy

Abyss policy (border management) is treated with Abyss policy.

High precision

This option avoids clipping and quantization but is slower.

3.6.4. Using Median Blur

Reducing salt and pepper noise



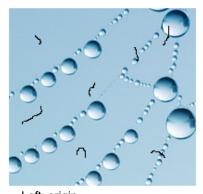




Left: origin

Middle: radius = 1 applied twice Right: radius = 1 applied three times

Reducing scratches







Left: origin Middle: radius = 2

Right: radius = 1 applied twice. The image is less blurred.



1



3.5. Mean Curvature Blur

3/29/25, 9:34 AM 3.7. Pixelize

3.7. Pixelize





3.7. Pixelize

3.7.1. Overview

Figure 17.22. Example for the "Pixelize" filter



Original



"Pixelize" applied

The Pixelize filter renders the image using large color blocks. It is very similar to the effect seen on television when obscuring a criminal during trial. It is used for the "Abraham Lincoln effect": see [BACH04].

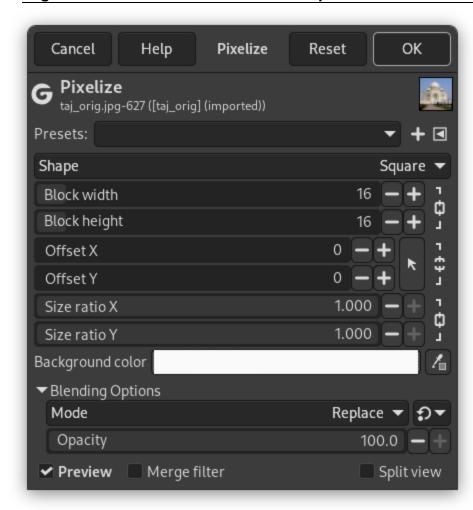
3.7.2. Activating the Filter

3/29/25, 9:34 AM 3.7. Pixelize

This filter is found in the main menu under Filters \rightarrow Blur \rightarrow Pixelize....

3.7.3. Options

Figure 17.23. "Pixelize" filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Shape

There are three Shape choices: Diamond, Round and Square (the default). Diamond and Round shapes will only be visible when you lower Size Ratio X/Y to about 0.6 (Diamond) or 0.5 (Round).

Block width, Block height

Here you can set the desired width and height of the blocks, in pixels.

By default, width and height are linked, indicated by the \Box chain symbol next to the input boxes. If you want to set width and height separately, click on that chain symbol to unlink them.

Size ratio X, Size ratio Y

Horizontal/Vertical size ratio (0.000-1.000) of a pixel inside a block. Default value is 1.000. The number of blocks remains the same; so, if you change ratio, block size changes, and missing pixels are replaced with the background color.

Offset X, Offset Y

Horizontal/Vertical offset of the shapes in pixels inside a block.

Background color

3/29/25, 9:34 AM 3.7. Pixelize

Default background is that of toolbox. You can change it by clicking on color source, which opens a <u>color selection</u> <u>dialog</u>, or picking a color using the <u>color picker</u> on the right.

Note that you can change the background color to be partially or completely transparent by lowering the alpha value in the color selection dialog. This can lead to interesting effects provided the layer you are working on has an alpha channel.

4







3.6. Median Blur



3.8. Selective Gaussian Blur

3.8. Selective Gaussian Blur





3.8. Selective Gaussian Blur

3.8.1. Overview

Figure 17.24. The Selective Gaussian Blur filter



Original



Blur applied

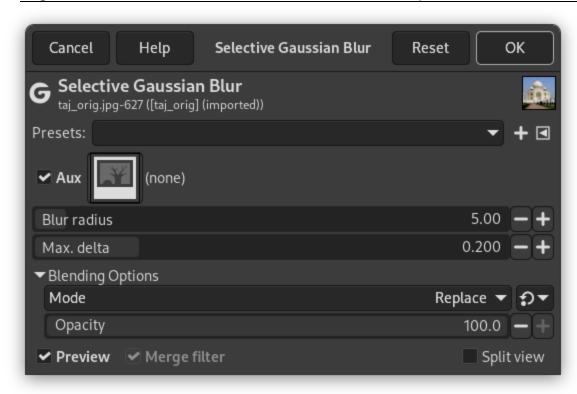
Contrary to the other blur plug-ins, the Selective Gaussian Blur plug-in doesn't act on all pixels: blur is applied only if the difference between its value and the value of the surrounding pixels is less than a defined Delta value. So, contrasts are preserved because difference is high on contrast limits. It is used to blur a background so that the foreground subject will stand out better. This add a sense of depth to the image with only a single operation.

3.8.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Blur \rightarrow Selective Gaussian Blur....

3.8.3. Options

Figure 17.25. "Selective Gaussian" filter parameters settings



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Aux

If there is another image on screen, you can select it as auxiliary input.

Blur radius

Here you can set the blur intensity, in pixels.

Max. delta

Maximum delta sets the maximum difference (0.0-1.0) between the pixel to be blurred and its surrounding pixels. When the value is above this delta, the blur will not be applied to that pixel.



3/29/25, 9:35 AM 3.9. Variable Blur

3.9. Variable Blur





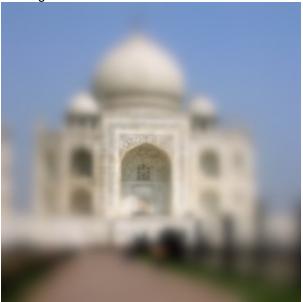
3.9. Variable Blur

3.9.1. Overview

Figure 17.26. The Variable Blur filter



Original



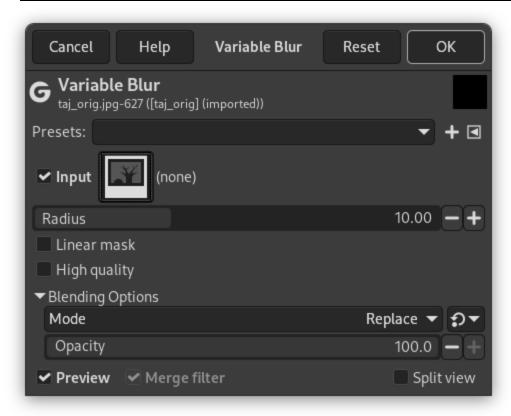
Variable Blur applied

Variable Blur blurs the image by a variable amount using a mask set in Input. Black in the mask layer will be minimally blurred, and white will be blurred at maximum value.

3.9.2. Options

3/29/25, 9:35 AM 3.9. Variable Blur

Figure 17.27. Variable Blur filter dialog options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Input

Here you can set the mask that determines how much a certain area of the input layer will be blurred. Black areas in the mask will result in minimal blurring of the output, and white will be blurred the most.

Radius

Maximal blur radius.

Linear mask

If enabled, use linear mask values.

High quality

If enabled, generates more accurate and consistent output, at the cost of being slower.



3.10. Circular Motion Blur

3. Blur Filters



3.10. Circular Motion Blur

3.10.1. Overview

Figure 17.28. The Circular Motion Blur filter



Original

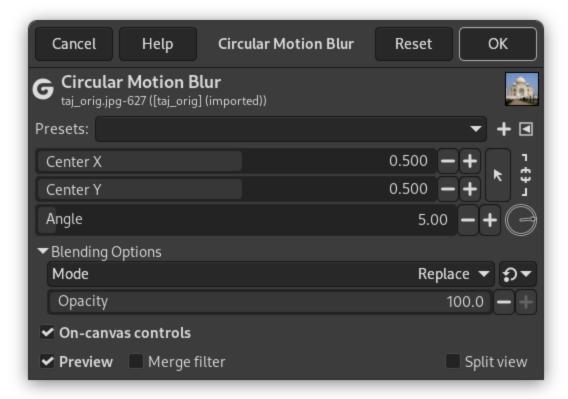


Blur applied

This filters creates a circular blur around a center. The default center is the center of the layer or selection. You can set center somewhere in the layer and this center is applied to the layer or to a selection if it exists.

3.10.2. Options

Figure 17.29. "Circular Motion Blur" filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

Center X, Center Y

Here, you can set the rotation center. Sliders and spin buttons control the position of rotation center on horizontal and vertical axis. You can also click on the rectangle button with an arrow on the right and then click on the image to pick coordinates.

Angle

More Angle will result in more blurring in a circular direction.

On-canvas controls

This option (default) allows you to modify blur settings directly on canvas, for easier visual tweaking of blur settings. It displays a line with handle on both ends to move rotation center and transform.

Press | Alt | key to only move rotation center without transforming.

Press Ctrl key to rotate by 15° steps.



3.9. Variable Blur







3.11. Linear Motion Blur

3.11. Linear Motion Blur

3. Blur Filters



3.11. Linear Motion Blur

3.11.1. Overview

Figure 17.30. The Linear Motion Blur filter



Original

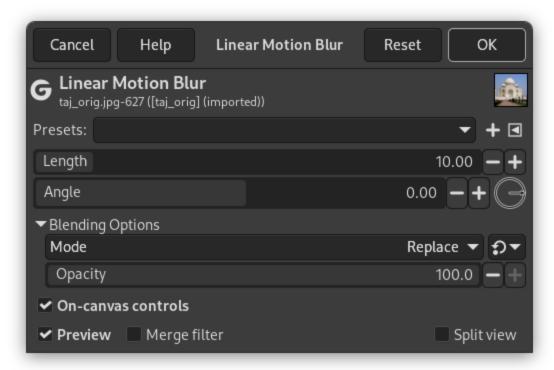


Blur applied

This filter creates a linear blur in a direction determined by the "Angle" option. The default direction is horizontal to the right (0.000 degree).

3.11.2. Options

Figure 17.31. "Linear Motion Blur" filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

Length

In this case, "Length" represents the blur intensity. More Length will result in more blurring.

Angle

"Angle" describes the direction of the movement. Thus, a setting of 90 will produce a vertical blur, and a setting of 0 will produce a horizontal blur.

On-canvas controls

This option (default) allows you to modify blur settings directly on canvas, for easier visual tweaking of blur settings. It displays a line with handle on both ends to vary direction and transform.

Press Ctrl key to change direction by 15° steps.







3.10. Circular Motion Blur



3.12. Zoom Motion Blur

3.12. Zoom Motion Blur

3. Blur Filters



3.12. Zoom Motion Blur

3.12.1. Overview

Figure 17.32. The Zoom Motion Blur filter



Original

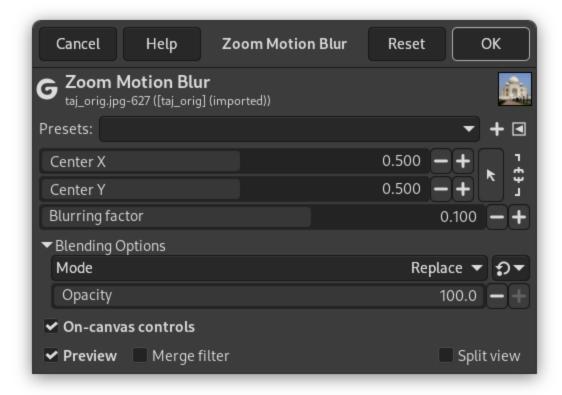


Blur applied

The name of this filter should be "Radial". It creates a blur in all directions around a center. The default center is the center of the layer or selection. You can set center somewhere in the layer and this center is applied to the layer or to a selection if it exists.

3.12.2. Options

Figure 17.33. "Zoom Motion Blur" filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

Center X, Center Y

Here, you can set the zoom center. Sliders and spin buttons control the position of zoom center on horizontal and vertical axis. You can also click on the rectangle button with an arrow on the right and then click on the image to pick coordinates.

Blurring factor

Increasing factor will result in more blurring in all directions of zoom.

On-canvas controls

This option (default) allows you to modify blur settings directly on canvas, for easier visual tweaking of blur settings. It displays a line with handle on both ends to vary center and blurring factor.

Press Alt key to vary center only.

Press | Ctrl | key to vary blurring factor only.



3.11. Linear Motion Blur





3.13. Tileable Blur

3/29/25, 9:36 AM 3.13. Tileable Blur

3.13. Tileable Blur

3. Blur Filters



3.13. Tileable Blur

3.13.1. Overview

Figure 17.34. Example for the "Tileable" filter



Original



Filter "Tileable Blur" applied

Tileable Blur is actually implemented by a Script-Fu script that invokes the Gaussian blur plug-in. This filter is used to soften tile seams in images used in tiled backgrounds. It does this by blending and blurring the boundary between images that will be next to each other after tiling.



Tip

If you want to treat only images borders, you can't apply filter to the whole image. The solution to get the wanted effect is as follows:

3/29/25, 9:36 AM 3.13. Tileable Blur

 Duplicate layer (Layer → Duplicate Layers) and select it to work on it.

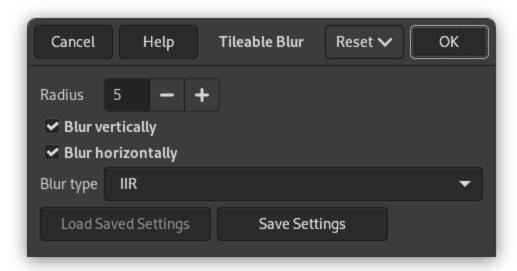
- 2. Apply "Tileable Blur" filter with a 20 pixels radius to this layer.
- Select all (Ctrl + A) and reduce selection (Selection → Shrink) to create a border with the wanted width.
- Give a feathered border to the selection by using Selection → Feather.
- 5. Delete selection with Ctrl + K
- 6. Merge layers with Layer → Merge down.

3.13.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Blur \rightarrow Tileable Blur....

3.13.3. Options

Figure 17.35. "Tileable Blur" filter options



Radius

The bigger the radius, the more marked is the blur. By selecting Horizontal and Vertical, you can make the horizontal and vertical borders tileable.

Blur vertically, Blur horizontally

These options are self-explanatory.

Blur type

Choose the algorithm to be applied:

IIR

for photographic or scanned images.

RLE

for computer-generated images.







3.12. Zoom Motion Blur



4. Enhance Filters

3/29/25, 9:36 AM 4. Enhance Filters

4. Enhance Filters



Chapter 17. Filters



4. Enhance Filters

4.1. Introduction

Enhance filters compensate for image imperfections. Such imperfections include dust particles, noise, interlaced frames (coming usually from a TV frame-grabber) and insufficient sharpness.

This category describes the following filters:

- Section 4.2, "Antialias"
- Section 4.3, "Deinterlace"
- Section 4.4, "High Pass"
- Section 4.5, "Noise Reduction"
- Section 4.6, "Red Eye Removal"
- Section 4.7, "Symmetric Nearest Neighbor"
- Section 4.8, "Sharpen (Unsharp Mask)"
- Section 4.9, "Despeckle"
- Section 4.10, "NL Filter"
- Section 4.11, "Wavelet Decompose"







3.13. Tileable Blur



4.2. Antialias

3/29/25, 9:13 PM 4.2. Antialias

4.2. Antialias



4. Enhance Filters



4.2. Antialias

4.2.1. Overview

This filter reduces alias effects (see Antialiasing) using the Scale3X edge-extrapolation algorithm. Scale3X is derived from Scale2X, which is a graphics effect to increase the size of small bitmaps guessing the missing pixels without interpolating pixels and blurring the images. Scale2X was originally developed to improve the quality of old Arcade and PC games with a low video resolution played with video hardware like TVs, Arcade monitors, PC monitors and LCD screens.

The Antialias filter works as follows:

For every pixel,

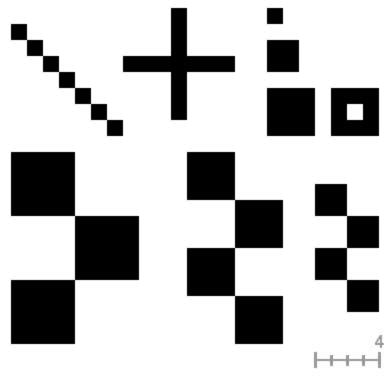
- 1. the filter expands the original pixel in 9 (3×3) new pixels according to the Scale3X algorithm, using the colors of the pixel and its 8 adjacent pixels (extrapolation);
- 2. then the filter subsamples the new pixels to a weighted average pixel.

4.2.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Enhance \rightarrow Antialias.

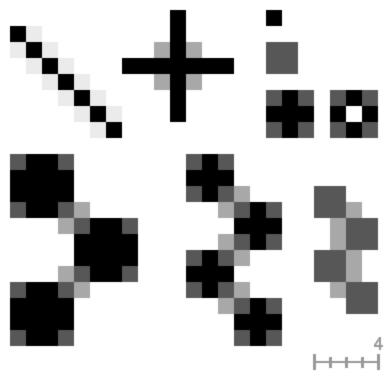
4.2.3. Examples

The following examples illustrate the effect on some patterns. The small squares are one pixel in size (zoom 16:1).



Original image (zoom 16:1)

3/29/25, 9:13 PM 4.2. Antialias



"Antialias" applied (zoom 16:1)

[8] [SCALE2X].

[9] [AdvanceMAME].



4. Enhance Filters



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4.3. Deinterlace

3/29/25, 9:14 PM 4.3. Deinterlace

4.3. Deinterlace



4. Enhance Filters



4.3. Deinterlace

4.3.1. Overview

Images captured by videocards, especially when fast movement is recorded, may look blurred and stripped, with split objects. This is due to how cameras work. They don't record 25 images per second, but 50, with half vertical resolution. There are two interlaced images in one frame. First line of first image is followed by first line of second image followed by second line of first image, etc. So, if there have been an important move between the two images, objects will appear split, shifted, stripped.

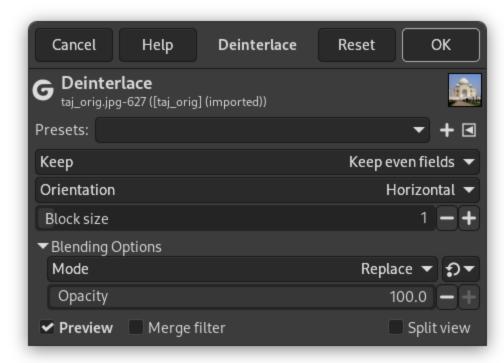
The Deinterlace filter keeps only one of both images and replaces missing lines by a gradient between previous and following lines. The resulting image, or selection, will be somewhat blurred, but can be improved by enhance filters. You can find interlaced images at [WKPD-DEINTERLACE].

4.3.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Enhance \rightarrow Deinterlace....

4.3.3. Options

Figure 17.36. Deinterlace filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

3/29/25, 9:14 PM 4.3. Deinterlace

These options are described in Section 2, "Common Features".

Keep

This setting lets you choose between Keep even fields and Keep odd fields. It determines which pixels are kept and which are removed. Try both options to see which gives the best results for your image.

Orientation

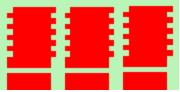
This setting lets you choose between deinterlacing Horizontal or Vertical lines.

Block size

This option lets you set the size of the deinterlaced rows or columns.

4.3.4. Example

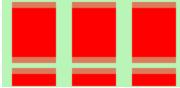
Figure 17.37. Simple applying example for the Deinterlace filter



Top: even lines pixels are shifted by one pixel to the right. Bottom: one line is missing. These images are zoomed to show pixels.



"Keep even fields" checked. Top: odd lines have been shifted to the right, to align themselves with the even lines. Bottom: the empty line has been filled with red.



"Keep odd fields" checked. Top: even lines have been shifted to the left, to align themselves with the odd lines. Bottom: the empty line persists, but joins up and down through a gradient.











4.4. High Pass

3/29/25, 9:14 PM 4.4. High Pass

4.4. High Pass





4.4. High Pass

4.4.1. Overview

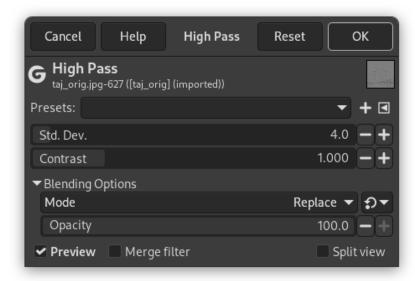
In sound processing, a high-pass filter filters high frequencies above a threshold. In digital images, frequency refers to sudden changes in brightness or color in neighboring pixels. The High Pass filter filters high essential details, and larger scale gradients are removed. This result, combined with the original image and "Soft Light" or "Hard Light" merge mode, is used to sharpen images. It enhances fine details.

4.4.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Enhance \rightarrow High Pass....

4.4.3. Options

Figure 17.38. "High Pass" filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Std. Dev.

Increasing this Standard Deviation lowers the filter threshold and more image details are taken in account for treatment.

Contrast

Increase/Decrease contrast of treated details.

4.4.4. Using High Pass Filter

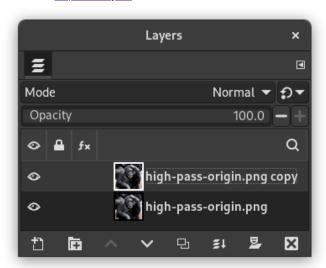
Procedure 17.1. Sharpening

1. Open your image:

3/29/25, 9:14 PM 4.4. High Pass

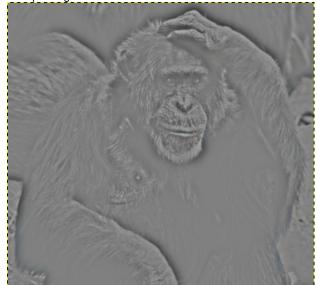


2. Use the **Duplicate layers**:



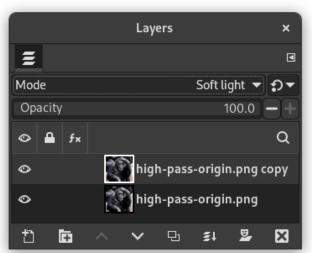
command to duplicate your image. This duplicate layer becomes the active layer. Open High Pass filter.

3.



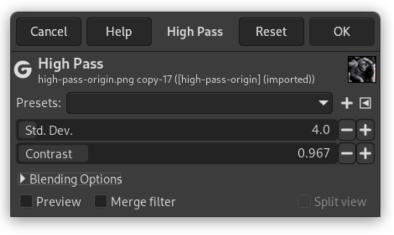
4. Change mode to Soft light (try Hard light also). 3/29/25, 9:14 PM 4.4. High Pass





5. Settings and on-canvas view









4.5. Noise Reduction

3/29/25, 9:14 PM 4.5. Noise Reduction

4.5. Noise Reduction



4. Enhance Filters



4.5. Noise Reduction

4.5.1. Overview

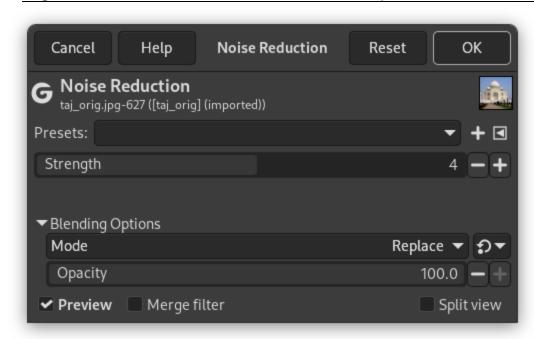
A simple GEGL filter to reduce noise.

4.5.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Enhance \rightarrow Noise Reduction....

4.5.3. Options

Figure 17.39. Noise Reduction filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Strength

Increasing Strength lessens noise, and increases blur: find compromise using the on-canvas preview.

4.5.4. Example

3/29/25, 9:14 PM 4.5. Noise Reduction



Original

3/29/25, 9:14 PM 4.5. Noise Reduction



Report a bug in GIMP Report a documentation error



4.4. High Pass



4.6. Red Eye Removal

4.6. Red Eye Removal



4. Enhance Filters



4.6. Red Eye Removal

4.6.1. Overview

Figure 17.40. Example for the "Red Eye Removal" filter



Original image



"Red Eye Removal" applied

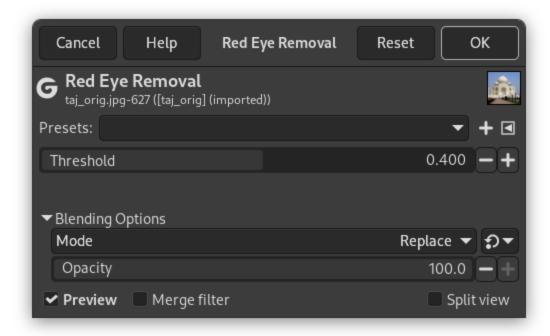
The aim of this filter is - guess what - to remove red eyes from an image. Before applying the "Red Eye Removal" you must do a selection (lasso or elliptical) of the boundary of the iris of the eye(s) having a red pupil. After only you can apply the filter on this selection. If you don't make this selection, the filter inform you that: "Manually selecting the eyes may improve the results".

4.6.2. Activating the Filter

This filter is found in the main menu under Filters → Enhance → Red Eye Removal....

4.6.3. Options

Figure 17.41. "Red Eye Removal" options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Threshold

If you move the cursor of threshold the amount of red color to eliminate will vary.



4.7. Symmetric Nearest Neighbor



4. Enhance Filters



4.7. Symmetric Nearest Neighbor

4.7.1. Overview

This filter blurs the image preserving edges. It is very effective in noise reduction maintaining sharp edges. It works comparing each pixel to its neighboring pixels and to 1 or 2 *pairs* of symmetric pixels around the center.



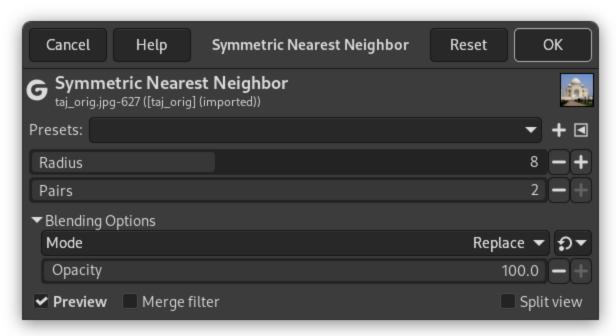
4 symmetric pairs

4.7.2. Activating the Filter

This filter is found in the main menu under Filters → Enhance → Symmetric Nearest Neighbor....

4.7.3. Options

Figure 17.42. "Symmetric Nearest neighbor" filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view

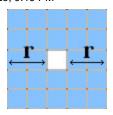


Note

These options are described in Section 2, "Common Features".

Radius

Radius, in pixels, of square pixel region. Width and height of this region are radius*2+1:



Pairs

You can select 1 or 2 pairs: higher number preserves more acute features.

4.7.4. Example





Left: original. Right: filter applied.



4.6. Red Eye Removal







4.8. Sharpen (Unsharp Mask)

4.8. Sharpen (Unsharp Mask)



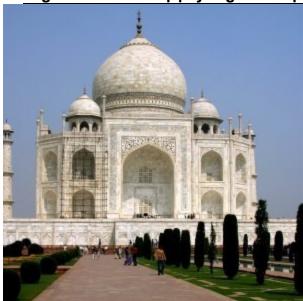




4.8. Sharpen (Unsharp Mask)

4.8.1. Overview

Figure 17.43. Applying example for the Sharpen filter



Original image



Filter "Sharpen" applied

Out-of-focus photographs and most digitized images often need a sharpness correction. This is due to the digitizing process that has to divide a color continuum in points with slightly different colors. Elements smaller than the sampling frequency will be averaged into a uniform color. So sharp borders will be rendered a little blurred. The same phenomenon appears when printing color dots on paper.

The Sharpen filter (previously called Unsharp Mask) sharpens edges of the elements without increasing noise or blemish.



Tip

Some imaging devices like digital cameras or scanners offer to sharpen the created images for you. We strongly recommend you disable this means of sharpening and use GIMP filters instead. This way you regain the full control over the sharpening of your images.

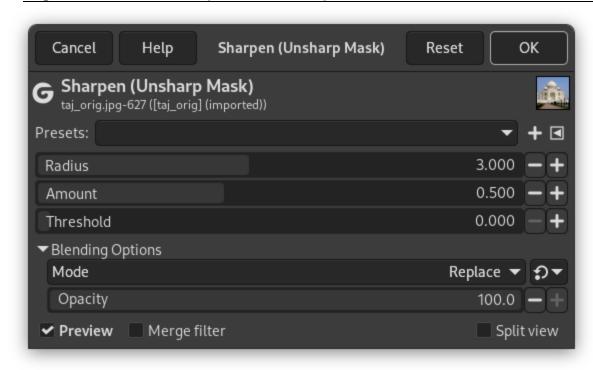
To prevent color distortion while sharpening, you can $\underline{\text{Decompose}}$ your image to HSV and work only on Value. Go to Colors \rightarrow Components \rightarrow Decompose.... Make sure the Decompose to Layers box is checked. Choose HSV and click OK. You will get a new gray-level image with three layers, one for Hue, one for Saturation, and one for Value. (Close the original image so you won't get confused). Select the Value layer and apply your sharpening to it. When you are done, with that same layer selected, reverse the process by using $\underline{\text{Compose}}$. Go to Colors \rightarrow Components \rightarrow Compose.... Again choose HSV and click OK. You will get back your original image except that it will have been sharpened in the Value component.

4.8.2. Activating the Filter

This filter is found in the main menu under Filters → Enhance → Sharpen (Unsharp Mask)....

4.8.3. Options

Figure 17.44. "Sharpen" filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

Radius

The slider and input boxes (0.0-1500.0) allow you to set how many pixels on either side of an edge will be affected by sharpening. It is better to always sharpen an image at its final resolution.

Amount

This slider and input boxes (0.0-300.0) allow you to set the strength of sharpening.

Threshold

This slider and input boxes (0.0-1.0) allow you to set the minimum difference in pixel values that indicates an edge where sharpen must be applied. So you can protect areas of smooth tonal transition from sharpening, and avoid creation of blemishes in face, sky or water surface.

4.8.4. How does an unsharp mask work?

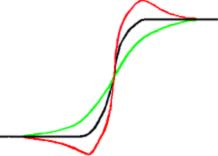
Using an unsharp mask to sharpen an image can seem rather weird. Here is the explanation:

Think of an image with a contrast in some place. The intensity curve of the pixels on a line going through this contrast will show an abrupt increase of intensity: like a stair if contrast is perfectly sharp (blue), like an S if there is some blur (yellow).



Now, we have an original image with some blur (black curve) we want to sharpen. We apply some more blur: the intensity variation will be more gradual (green curve).

Let us subtract the difference between blurredness intensity (green curve) and the intensity of the original image (black curve) to the intensity of the original image (black curve). We get the red curve, which is more abrupt: contrast and sharpness are increased. QED.



Unsharp mask was first used in silver photography. The photographer first creates a copy of the original negative by contact, on a film, placing a thin glass plate between both; that will produce a blurred copy because of light diffusion. Then both films are placed in a photo enlarger, to reproduce them on paper. The dark areas of the positive blurred film, opposed to the clear areas of the original negative will prevent light to go through and so will be subtracted from the light going through the original film.

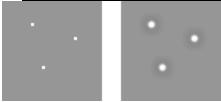
In digital photography, with GIMP, you will go through the following steps:

- 1. Open your image and duplicate it Image → Duplicate
- 2. In the copy, duplicate the layer Layer → Duplicate layers, then from the Filters menu apply Blur → Gaussian Blur to the duplicated layer with the default IIR option and radius 5.
- 3. In the Layers dialog of the duplicated image, change Mode to "Subtract", and in the right-click menu, select "Merge down".
- 4. Click and drag the only layer you got into the original image, where it appears as a new layer.
- 5. Change the Mode in this Layers dialog to "Addition".

Voilà. The "Unsharp Mask" plug-in does the same for you.

At the beginning of the curve, you can see a dip. If blurring is important, this dip is very deep; the result of the subtraction can be negative, and a complementary color stripe will appear along the contrast, or a black halo around a star on the light background of a nebula (black eye effect).

Figure 17.45. Black eye effect





4.7. Symmetric Nearest Neighbor







4.9. Despeckle

3/29/25, 9:16 PM 4.9. Despeckle

4.9. Despeckle



4. Enhance Filters



4.9. Despeckle

4.9.1. Overview

This filter is used to remove small defects due to dust, or scratches, on a scanned image, and also moiré effects on image scanned from a magazine. You should select isolated defects before applying this filter, in order to avoid unwanted changes in other areas of your image. The filter replaces each pixel with the median value of the pixels within the specified radius.

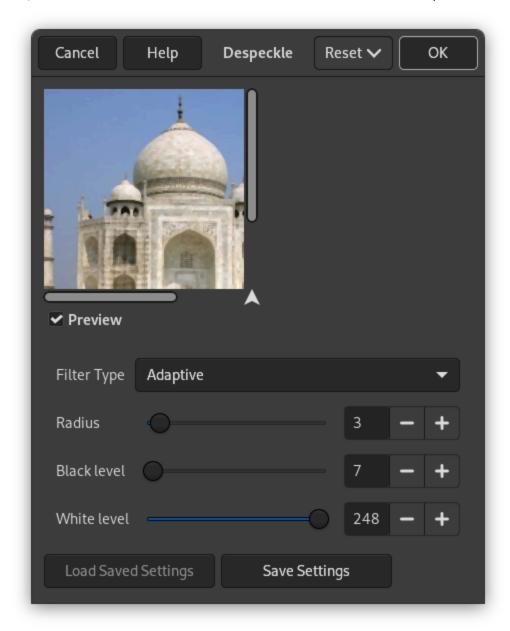
4.9.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Enhance \rightarrow Despeckle....

4.9.3. Options

Figure 17.46. "Despeckle" filter options

3/29/25, 9:16 PM 4.9. Despeckle



Preview

If checked, parameter setting results are interactively displayed in preview.

Median

Adaptive

Adapts the radius to image or selection content by analyzing the histogram of the region around the target pixel. The adapted radius will always be equal to or smaller than the specified radius.

Recursive

Repeats filter action which gets stronger.

Radius

Sets size of action window from 1 (3×3 pixels) to 20 (41×41). This window moves over the image, and the color in it is smoothed, so imperfections are removed.

Black level

Only include pixels brighter than the set value in the histogram (-1-255).

White level

Only include pixels darker than the set value in the histogram (0-256).

3/29/25, 9:16 PM 4.9. Despeckle



4.8. Sharpen (Unsharp Mask)

T

4.10. NL Filter

3/29/25, 9:16 PM 4.10. NL Filter

4.10. NL Filter





4.10. NL Filter

4.10.1. Overview

Figure 17.47. Example for the NL-Filter



Original image



"NL Filter" applied

NL means "Non Linear". Derived from the Unix **pnmnlfilt** program, it joins smoothing, despeckle and sharpen enhancement functions. It works on the whole layer, not on the selection.

This is something of a swiss army knife filter. It has 3 distinct operating modes. In all of the modes each pixel in the image is examined and processed according to it and its surrounding pixels values. Rather than using 9 pixels in a 3×3 block, it uses a hexagonal block whose size can be set with the Radius option.

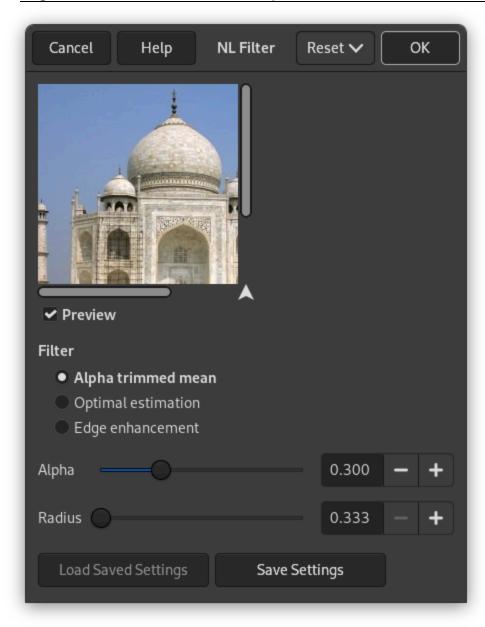
3/29/25, 9:16 PM 4.10. NL Filter

4.10.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Enhance \rightarrow NL Filter.... The filter does not work if the active layer has an alpha channel. Then the menu entry is disabled.

4.10.3. Options

Figure 17.48. "NL Filter" options



Preview

When checked, parameter setting results are interactively displayed in preview.

Filter

The Operating Mode is described below.

Alpha

Controls the amount of the filter to apply. Valid range is 0.00-1.00. The exact meaning of this value depends on the selected operating mode. Note that this parameter is related to but not the same as the alpha parameter used in the **pnmnlfilt** program.

Radius

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Controls the size of the effective sampling region around each pixel. The range of this value is 0.33-1.00, where 0.33 means just the pixel itself (and thus the filter will have no effect), and 1.00 means all pixels in the 3×3 grid are sampled.

4.10.4. Operating Modes

This filter can perform several distinct functions:

Alpha trimmed mean

The value of the center pixel will be replaced by the mean of the 7 hexagon values, but the 7 values are sorted by size and the top and bottom Alpha portion of the 7 are excluded from the mean. This implies that an Alpha value of 0.0 gives the same sort of output as a normal convolution (i.e. averaging or smoothing filter), where Radius will determine the "strength" of the filter. A good value to start from for subtle filtering is Alpha = 0.0, Radius = 0.55. For a more blatant effect, try Alpha = 0.0 and Radius = 1.0.

An Alpha value of 1.0 will cause the median value of the 7 hexagons to be used to replace the center pixel value. This sort of filter is good for eliminating "pop" or single pixel noise from an image without spreading the noise out or smudging features on the image. Judicious use of the Radius parameter will fine tune the filtering. Intermediate values of Alpha give effects somewhere between smoothing and "pop" noise reduction. For subtle filtering try starting with values of Alpha = 0.8, Radius = 0.6. For a more blatant effect try Alpha = 1.0, Radius = 1.0.

Optimal estimation

This type of filter applies a smoothing filter adaptively over the image. For each pixel the variance of the surrounding hexagon values is calculated, and the amount of smoothing is made inversely proportional to it. The idea is that if the variance is small then it is due to noise in the image, while if the variance is large, it is because of "wanted" image features. As usual the *Radius* parameter controls the effective radius, but it probably advisable to leave the radius between 0.8 and 1.0 for the variance calculation to be meaningful. The *Alpha* parameter sets the noise threshold, over which less smoothing will be done. This means that small values of *Alpha* will give the most subtle filtering effect, while large values will tend to smooth all parts of the image. You could start with values like *Alpha* = 0.2, *Radius* = 1.0, and try increasing or decreasing the *Alpha* parameter to get the desired effect. This type of filter is best for filtering out dithering noise in both bitmap and color images.

Edge enhancement

This is the opposite type of filter to the smoothing filter. It enhances edges. The Alpha parameter controls the amount of edge enhancement, from subtle (0.1) to blatant (0.9). The Radius parameter controls the effective radius as usual, but useful values are between 0.5 and 0.9. Try starting with values of Alpha = 0.3, Radius = 0.8.

Combination use

The various operating modes can be used one after the other to get the desired result. For instance to turn a monochrome dithered image into grayscale image you could try one or two passes of the smoothing filter, followed by a pass of the optimal estimation filter, then some subtle edge enhancement. Note that using edge enhancement is only likely to be useful after one of the non-linear filters (alpha trimmed mean or optimal estimation filter), as edge enhancement is the direct opposite of smoothing.

For reducing color quantization noise in images (i.e. turning .gif files back into 24 bit files) you could try a pass of the optimal estimation filter (ALpha = 0.2, Radius = 1.0), a pass of the median filter (ALpha = 1.0, Radius = 0.55), and possibly a pass of the edge enhancement filter. Several passes of the optimal estimation filter with declining ALpha values are more effective than a single pass with a large ALpha value. As usual, there is a trade-off between filtering effectiveness and losing detail. Experimentation is encouraged.











4.11. Wavelet Decompose

4.11. Wavelet Decompose





4.11. Wavelet Decompose

4.11.1. Overview



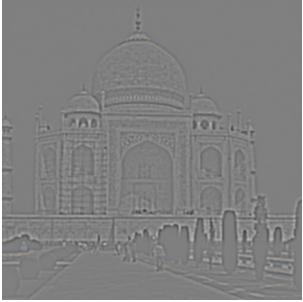
Note

Explanations are mostly inspired from the Pat David's tutorials https://patdavid.net/2011/12/getting-around-in-gimp-skin-retouching.html and https://patdavid.net/2014/07/wavelet-decompose-again.html.

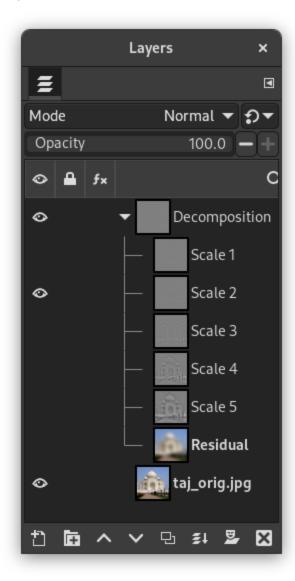
Figure 17.49. Example for "Wavelet decompose" filter



Original image



"Wavelet Decompose" applied. Only scale 2 is made visible in the layer group.



This filter decomposes the active layer or selection into several layers, named "scales", each of them containing a particular set of details. The finest details are in the first layer, each layer below it has less details until you get to the last one, at bottom. This last layer is called "residual" and holds what is left after all detail layers have been removed; it represents the global contrast and colors of the image.

Each of the scale layers are set to be combined using the Grain Merge layer mode. This means that pixels that have a 50% value will not affect the final result. So, painting a wavelet scale with neutral gray (R:50% G:50% B:50%) will erase details.

Note that for images using integer <u>precision</u>, the <u>legacy</u> grain merge mode is used. This avoids imperfect reconstruction of the image when using integer precision. When using floating point precision, the regular grain merge mode is used.

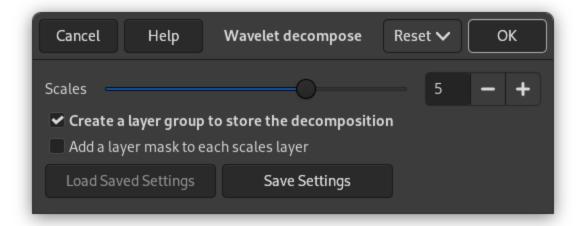
Wavelet-decompose is a wonderful filter for skin smoothing and retouching, removing blemishes, wrinkles, or spots from your photos. It can also be used for sharpening and local contrast enhancement and for removing stains, colors, or tones. All this is well explained in the tutorials mentioned above.

4.11.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Enhance \rightarrow Wavelet decompose.

4.11.3. Options

Figure 17.50. "Wavelet decompose" options



Scales: Default scales number is 5. You can increase it to increase scale fineness.

Create a layer group to store the decomposition: layer groups are treated in Section 5, "Layer Groups".

Add a layer mask to each scale layer: layer masks are treated in Section 2.1.4, "Layer masks".



3/29/25, 9:17 PM 5. Distort Filters

5. Distort Filters



Chapter 17. Filters



5. Distort Filters

5.1. Introduction

Distort filters transform your image in many different ways. This category describes the following filters:

- Section 5.2, "Apply Lens"
- Section 5.3, "Emboss"
- Section 5.4, "Engrave"
- Section 5.5, "Lens Distortion"
- Section 5.6, "Kaleidoscope" Section 5.7, "Mosaic"
- Section 5.8, "Newsprint"
- Section 5.9, "Polar Coordinates"
- Section 5.10, "Ripple"
- Section 5.11, "Shift"
- Section 5.12, "Spherize"
- Section 5.13, "Value Propagate"
- Section 5.14, "Video Degradation"
 Section 5.15, "Waves"
- Section 5.16, "Whirl and Pinch"
- Section 5.17, "Wind"
- Section 5.18, "Blinds"
- Section 5.19, "Curve Bend"
- Section 5.20, "Page Curl"







4.11. Wavelet Decompose



5.2. Apply Lens

5.2. Apply Lens





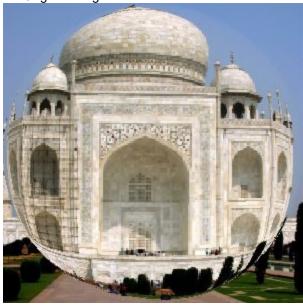
5.2. Apply Lens

5.2.1. Overview

Figure 17.51. The same image, before and after applying lens effect.



Original image



Filter "Apply lens" applied

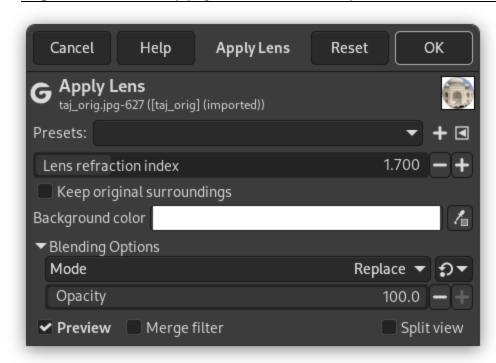
After applying this filter, a part of the active layer is rendered as through a spherical lens.

5.2.2. Activating the Filter

3/29/25, 9:17 PM 5.2. Apply Lens

5.2.3. Options

Figure 17.52. "Apply Lens" filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Lens refraction index

Lens will be more or less convergent (1-100).

Keep original surroundings

The lens seems to be put on the active layer.

Report a bug in GIMP Report a documentation error

Background color

The part of the active layer outside the lens will have the background color selected in the toolbox. You can select the color:

- Click on the color button to open the color selector dialog.
- Click on the eye-drop button on the right to pick color from the image.



3/29/25, 9:17 PM 5.3. Emboss

5.3. Emboss

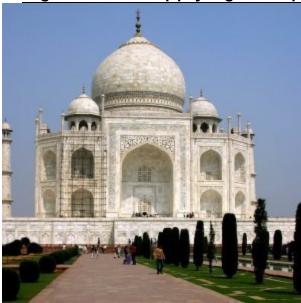
5. Distort Filters



5.3. Emboss

5.3.1. Overview

Figure 17.53. Applying example for the Emboss filter



Original image



Filter "Emboss" applied

This filter stamps and carves the active layer or selection, giving it relief with bumps and hollows. Bright areas are raised and dark ones are carved. You can vary the lighting.

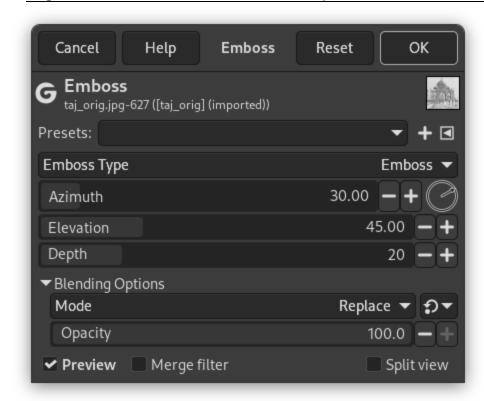
5.3.2. Activating the Filter

3/29/25, 9:17 PM 5.3. Emboss

This filter is found in the main menu under Filters \rightarrow Distorts \rightarrow Emboss....

5.3.3. Options

Figure 17.54. "Emboss" filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

Emboss Type

Emboss

This changes the colors in your image to grayscale and the relief is more pronounced, looking like metal. Although the image looks grayscale, its color mode is not changed. In most cases this means it will stay RGB, but you can also use this filter on Indexed and Grayscale images.

Bumpmap (preserve original colors)

Relief is smooth and colors are preserved.

Azimuth

This is about lighting according to the points of the compass (0 - 360). If you suppose South is at the top of your image, then East (0°) is on the left. Increasing value goes counter-clockwise.

Elevation

Elevation is the height from the horizon (0°) , in principle up to the zenith (90°) , but here it means up to the opposite horizon (180°) .

Depth

Bumps are higher and hollows deeper when Depth increases.







3/29/25, 9:17 PM 5.3. Emboss

5.2. Apply Lens



Report a bug in GIMP Report a documentation error

5.4. Engrave

3/29/25, 9:18 PM 5.4. Engrave

5.4. Engrave





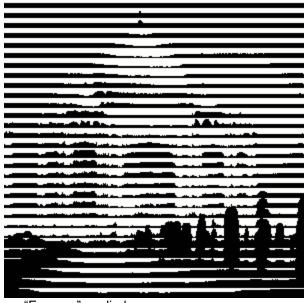
5.4. Engrave

5.4.1. Overview

Figure 17.55. Example for the "Engrave" filter



Original image



"Engrave" applied

This filter produces an engraving effect: the image is turned black and white and some horizontal lines of varying height are drawn depending on the value of underlying pixels. The resulting effect reminds of engravings found in coins and old book illustrations.



Note

The "Engrave" filter operates only on floating selections and layers with an alpha channel. If the active layer does not have an alpha channel

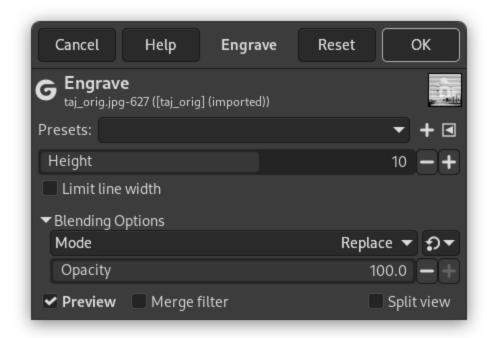
please add it first.

5.4.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Distorts \rightarrow Engrave....

5.4.3. Options

Figure 17.56. "Engrave" options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Height

This option specifies the height of the engraving lines. The value goes from 2 to 16.

Limit line width

If this option is enabled thin lines are not drawn on contiguous color areas. See the figure below for an example of this option result.

Figure 17.57. Example result of Limit line width option



Original image

3/29/25, 9:18 PM 5.4. Engrave



Limit line width option enabled



Limit line width option disabled



5.3. Emboss







5.5. Lens Distortion

3/29/25, 9:18 PM 5.5. Lens Distortion

5.5. Lens Distortion

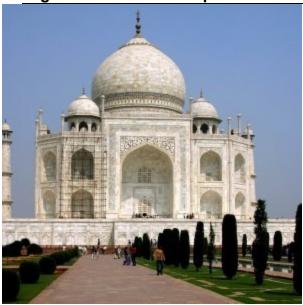




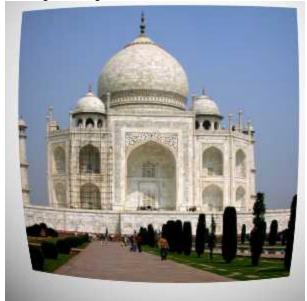
5.5. Lens Distortion

5.5.1. Overview

Figure 17.58. Example for the "Lens Distortion" filter



Original image



"Lens Distortion" applied

This filter lets you simulate but also correct the typical distortion effect introduced in photo images by the glasses contained in the camera lenses.

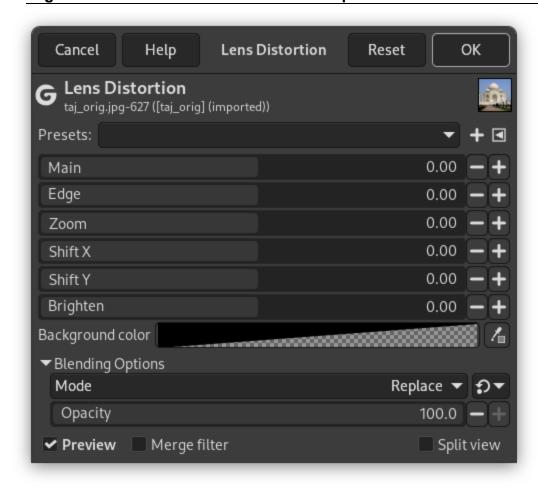
5.5.2. Activating the Filter

3/29/25, 9:18 PM 5.5. Lens Distortion

This filter is found in the main menu under Filters → Distorts → Lens Distortion....

5.5.3. Options

Figure 17.59. "Lens Distortion" options



The allowed range of all options is from -100.0 to 100.0.

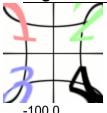
Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view

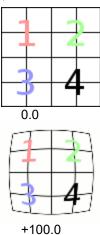


Main

The amount of spherical correction to introduce. Positive values make the image convex while negative ones make it concave. The whole effect is similar to wrapping the image inside or outside a sphere.

Figure 17.60. Example result of Main option

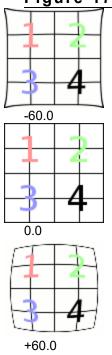




Edge

Specifies the amount of additional spherical correction at image edges.

Figure 17.61. Example result of Edge option (Main set to 50.0)



Zoom

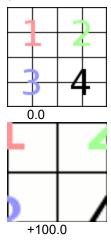
Specifies the amount of the image enlargement or reduction caused by the hypothetical lens.

Figure 17.62. Example result of Zoom option



-100.0

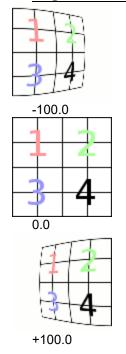
3/29/25, 9:18 PM 5.5. Lens Distortion



Shift X, Shift Y

These two options specify the shift of the image produced by not perfectly centered pairs of lenses. As above this option produces visible results only if the Main or Edge options are non zero.

Figure 17.63. Example result of Shift X option (Main set to 70.0)

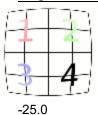


Brighten

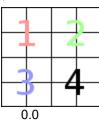
The amount of the "vignetting" effect: the brightness decrease/increase due to the lens curvature that produces a different light absorption.

The Main or Edge options must be non zero for this option to produce noticeable results.

Figure 17.64. Example result of the Brighten option (Main set to 75.0)



3/29/25, 9:18 PM 5.5. Lens Distortion





Background color

The part of the active layer outside the lens will have the background color selected here. You can select the color:

- Click on the color button to open the color selector dialog.
- Click on the eye-drop button on the right to pick a color from the image.







5.6. Kaleidoscope

5.6. Kaleidoscope

5. Distort Filters



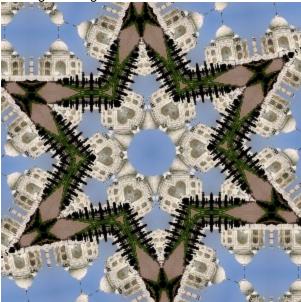
5.6. Kaleidoscope

5.6.1. Overview

Figure 17.65. Example for the "Kaleidoscope" filter



Original image



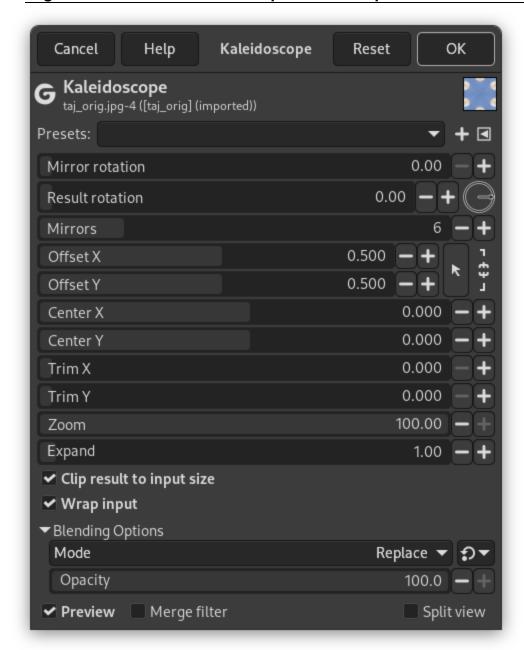
Filter "Kaleidoscope" applied with the following adjusted settings: mirror rotation 25.0, Zoom 20.0.

This filter creates a kaleidoscope by mirroring and adjusting the original image through several parameters.

5.6.2. Activating the Filter

5.6.3. Options

Figure 17.66. "Kaleidoscope" filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Mirror rotation

The rotation applied to the mirrored copies of the image.

Result rotation

The rotation applied to the output image.

Mirrors

The number of mirrored copies of the image to use.

Offset X, Offset Y

Horizontal and vertical position of symmetry center in the output image. The arrow button can be used to pick a location from the current image. The $\ \Box$ chain button can be used to enable or disable forcing the same values for

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Offset X and Offset Y.

Center X, Center Y

X axis and Y axis ratio for the center of mirroring.

Trim X, Trim Y

X axis and Y axis ratio for trimming mirror expanse.

Zoom

Scale factor to adjust the rendering size.

Expand

It is unclear what the exact effect of this is. It also seems to be relating to scaling.

Clip result to input size

If enabled, clips the mirrored result to the input size.

Wrap input

If enabled, fills the entire output area.







5.5. Lens Distortion



<u>5.7. Mosaic</u>

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5.7. Mosaic





5.7. Mosaic

5.7.1. Overview

Figure 17.67. Applying example for the "Mosaic" filter



Original image



Filter "Mosaic" applied

It cuts the active layer or selection into many squares or polygons which are slightly raised and separated by joins, giving so an aspect of mosaic.

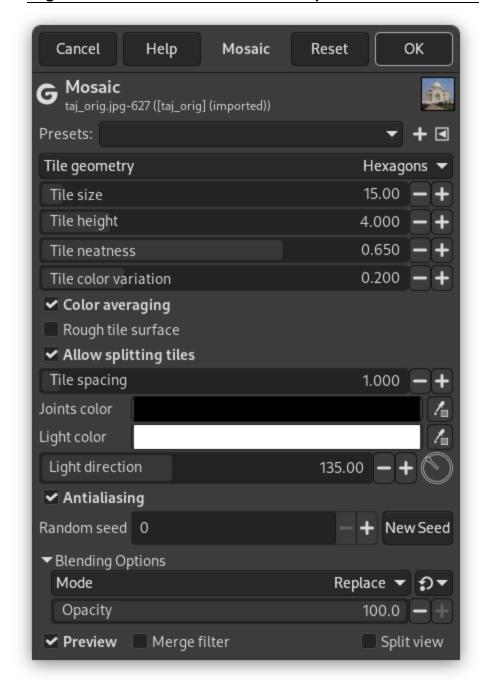
5.7.2. Activating the Filter

3/29/25, 9:18 PM 5.7. Mosaic

This filter is found in the main menu under Filters \rightarrow Distorts \rightarrow Mosaic....

5.7.3. Options

Figure 17.68. "Mosaic" filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Tile geometry

This option is self-understanding:

Squares

Not exactly squares, but 4 edges

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Hexagons

6 edges (hexa = 6)

Octagons

8 edges (octa = 8)

Triangles

3 edges (tri = 3)

Tile size

Average diameter of each tile (in pixels). Slider and input box allow you to set the size of tile surface (2-1000).

Tile height

That's ledge, relief of tiles. Value is width of the lit border in pixels.

Tile neatness

When set to 1, most of tiles have the same size. With 0 value, size is determined at random and this may lead to shape variation.

Tile color variation

Each tile has only one color. So the number of colors is reduced, compared to the original image. Here you can increase the number of colors a little.

Color averaging

When this option is unchecked, the image drawing can be recognized inside tiles. When checked, the colors inside tiles are averaged into a single color.

Rough tile surface

With this option tile surface looks pitted.

Allow splitting tiles

This option splits tiles in areas with many colors, and so allows a better color gradation and more details in these areas.

Tile spacing

That's width of the join between tiles.

Joints/Light color

Tiles are lit with the foreground color of the toolbox, and shadow is colored with the background color. Joins have the background color. You can change these colors using the color buttons or the color pickers on the right.

Light direction

By default light comes from the upper left corner (135°). You can change this direction from 0 to 360.

Antialiasing

This option reduces the stepped aspect that may have borders.

Random seed, New Seed

This option controls the randomness of the filter. The Random seed box lets you manually enter a seed for the randomization algorithm used. You can also generate a random seed by pressing the New Seed button. If the same random seed is used in the same situation, the filter produces exactly the same results. A different random seed produces different results.







5.6. Kaleidoscope

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5.8. Newsprint

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5.8. Newsprint





5.8. Newsprint

5.8.1. Overview

Figure 17.69. Applying example for the Newsprint filter







Filter "Newsprint" applied using RGB color mode, PSSquare pattern for all channels, red period 6, green period 8, blue period 10, angle 15 for all channels.

This filter performs digital halftoning with optional modulations. Halftoning is the process of rendering an image with multiple levels of gray or color (i.e. a continuous tone image) on a device with fewer tones; often a bi-level device such as a printer or typesetter. Be aware that Newsprint is not a filter for generating half-tone screens for print, but for simulating the appearance of printing with them.

The basic premise is to trade off resolution for greater apparent tone depth (this is known as spatial dithering).

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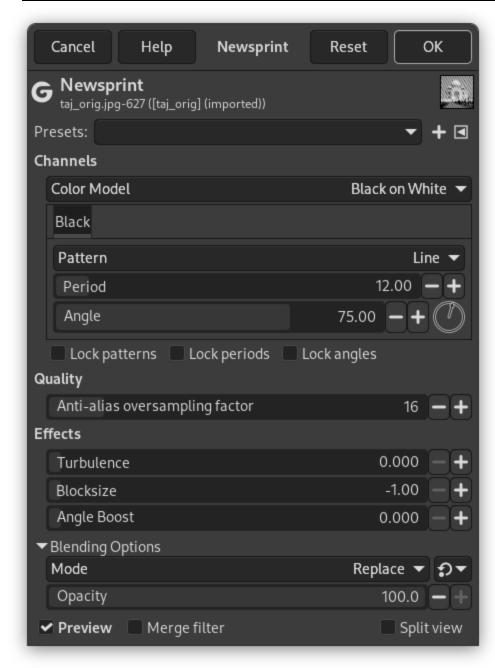
There are many approaches to this, the simplest of which is to throw away the low-order bits of tone information; this is what the posterize filter does. Unfortunately, the results don't look too good. However, no spatial resolution is lost. Imagine a grid super-imposed on the original image. The image is divided into cells by the grid - each cell will ultimately hold a single spot made up of multiple output pixels in order to approximate the darkness of the original image in that cell. Obviously, a large cell size results in a heavy loss in resolution!

5.8.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Distorts \rightarrow Newsprint....

5.8.3. Options

Figure 17.70. "Newsprint" filter options



3/29/25, 9:19 PM 5.8. Newsprint



Note

These options are described in Section 2, "Common Features".

Channels

This group controls the channels to use and the settings for each channel.

Color Model

Select which color inks to use: White on Black, Black on White, RGB, or CMYK.

For each color ink or channel

Settings that can be changed for each color ink or channel are listed here.

Pattern

Select the halftoning pattern to use. Choices are Line, Circle, Diamond,, PSSquare (or Euclidean) dot, Crossing Lines.

Period

The number of pixels across one repetition of a base pattern at base resolution.

Angle

The grid angle that should be used. This angle can be adjusted with the slider, number entry, or using the angle control by moving the arrow in the circle.

Black pullout

This setting is only available when CMYK was chosen as Color Model and the selected channel is Black. It regulates how much of common gray to pull out of CMY.

Lock patterns, Lock periods, Lock angles

These three check boxes, if enabled, lock the settings mentioned above to be the same for all channels. If disabled, then these settings can be set individually for each channel.

Quality

Anti-alias oversampling factor This sets the number of samples that are averaged for anti-aliasing the result. Proper halftoning does not need anti-aliasing: the aim is to reduce the color depth after all! However, since this plug-in is mainly for special effects, the results are displayed on screen instead of on a printer. So it is often useful to apply a little anti-aliasing to simulate ink smearing on paper. If you do want to print the resulting image then set the antialiasing to 1 (i.e., off).

Effects

Turbulence

Color saturation dependent compression of period.

Blocksize

Number of periods per tile. This tiling avoids high frequency anomalies that angle boost causes.

Angle Boost

Multiplication factor for the desired rotation of the local space for the texture. The way this is computed makes it weak for desaturated colors and possibly stronger where there is color.











5.9. Polar Coordinates

5. Distort Filters



5.9. Polar Coordinates

5.9.1. Overview

Figure 17.71. Example for Polar Coordinates filter







"Polar Coordinates" filter applied

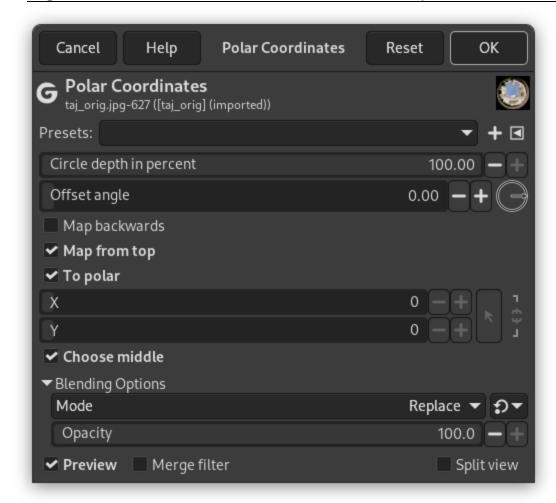
It gives a circular or a rectangular representation of your image with all the possible intermediates between both.

5.9.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Distorts \rightarrow Polar Coordinates....

5.9.3. Options

Figure 17.72. "Polar Coordinates" filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

Circle depth in percent

Slider and input box allow you to set the "circularity" of the transformation, from rectangle (0%) to circle (100%).

Offset angle

This option controls the angle the drawing will start from (0 - 359°), and so turns it around the circle center.

Map backwards

When this option is checked, the drawing will start from the right instead of the left.

Map from top

If unchecked, the mapping will put the bottom row in the middle and the top row on the outside. If checked, it will be the opposite.

To polar

If unchecked, the image will be circularly mapped into a rectangle (odd effect). If checked, the image will be mapped into a circle.

X, Y

These polar coordinates are active only if the "Choose middle" option is unchecked.

Choose middle

Checked by default: origin center is at the middle of the layer. If unchecked, you can modify X and Y parameters to position the origin center.

5.9.4. Examples

Figure 17.73. With text





If you have just written the text, you must Flatten the image before using the filter.

Figure 17.74. With two horizontal bars















5.10. Ripple

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5.10. Ripple

5. Distort Filters



5.10. Ripple

5.10.1. Overview

Figure 17.75. "Ripple" filter example



Original image



Filter "Ripple" applied

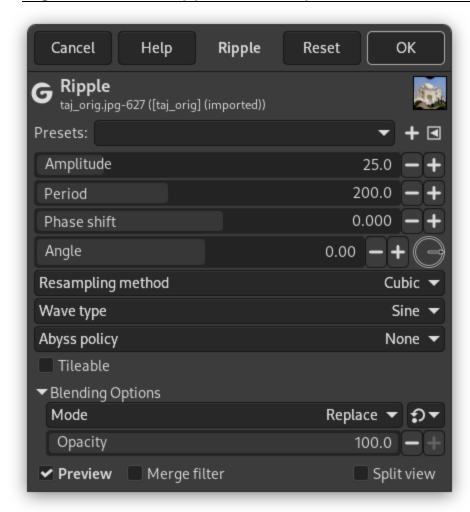
It displaces the pixels of the active layer or selection to waves or ripples reminding a reflection on disturbed water.

5.10.2. Activating the Filter

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5.10.3. Options

Figure 17.76. "Ripple" filter options

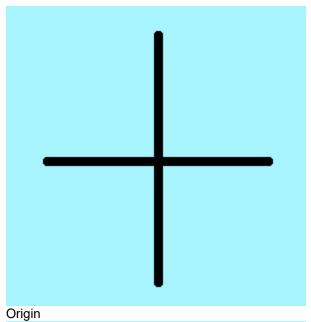


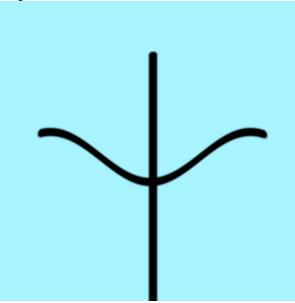
Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Original images for examples

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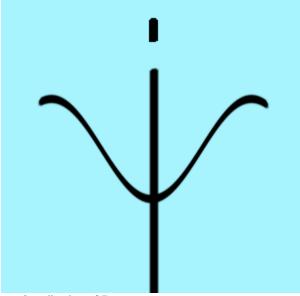




Ripple applied with default options

Amplitude

It is related to wave height (0-200 pixels).

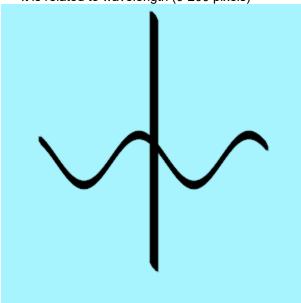


Amplitude = 25

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Period

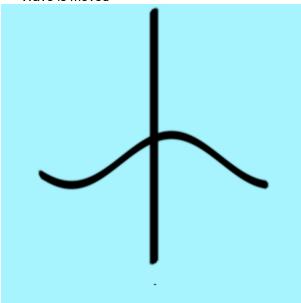
It is related to wavelength (0-200 pixels)



Period = 110

Phase shift

Wave is moved

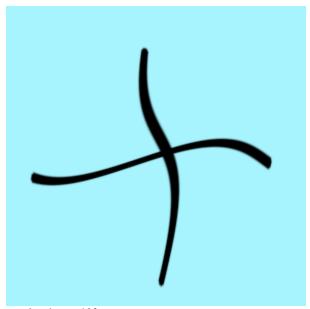


Phase shift = 0.400

Angle

Warps wave

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Angle = -40°

Resampling methods

These interpolation methods are described in <u>Interpolation</u>.

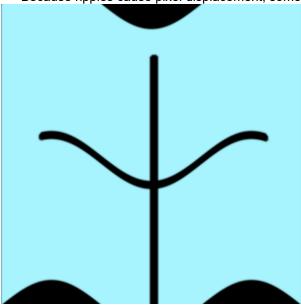
Wave type

Choose how the wave should look like:

- Sawtooth
- Triangle
- Sine

Abyss policy

Because ripples cause pixel displacement, some pixels may be missing on the image sides:



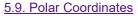
Abyss policy = Black

Abyss policy (border management) is treated with Abyss policy.

Tileable

This preserves the seamless properties if your image is a tile pattern.







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5.11. Shift

3/29/25, 9:19 PM 5.11. Shift

5.11. Shift

5. Distort Filters



5.11. Shift

5.11.1. Overview

Figure 17.77. Example for the Shift filter



Original image



Filter "Shift" applied

It shifts all pixel rows, horizontally or vertically, in the current layer or selection, on a random distance and within determined limits.

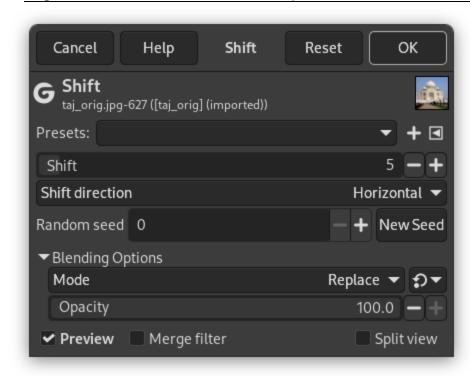
5.11.2. Activating the Filter

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This filter is found in the main menu under Filters \rightarrow Distorts \rightarrow Shift....

5.11.3. Options

Figure 17.78. "Shift" filter options

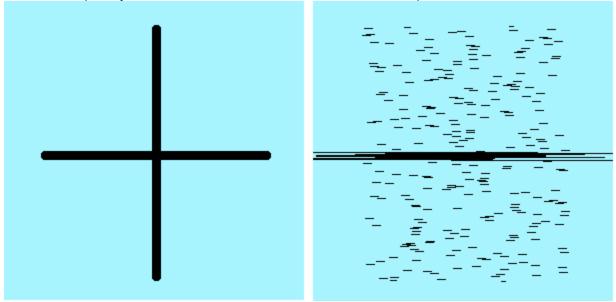


Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Shift

With this option, you can set the maximum shift, between 1 and 200 pixels.



Left: original. Right: shift = 100 horizontally.

Shift direction

This option sets the direction horizontally or vertically.

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Random seed, New Seed

This option controls the randomness of the filter. The Random seed box lets you manually enter a seed for the randomization algorithm used. You can also generate a random seed by pressing the New Seed button. If the same random seed is used in the same situation, the filter produces exactly the same results. A different random seed produces different results.

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5.10. Ripple

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5.12. Spherize

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5.12. Spherize





5.12. Spherize

5.12.1. Overview

This filter creates a kind of bubble whose size is that of the image or selection, as if the content was wrapped around a sphere.

Figure 17.79. Spherize filter example, with default values



Original image



"Spherize" filter applied

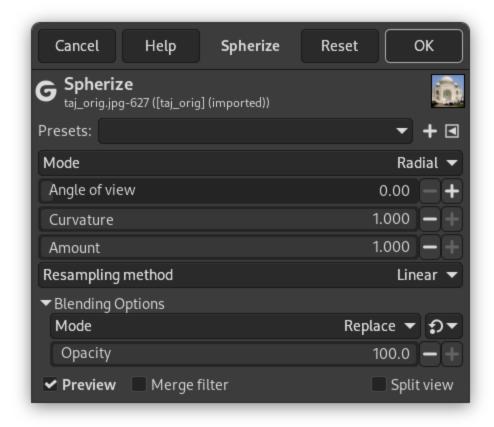
5.12.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Distorts \rightarrow Spherize....

5.12.3. Options

Figure 17.80. "Spherize" filter options

3/29/25, 9:20 PM 5.12. Spherize



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

Mode

- Radial is the default mode. See example above.
- Horizontal: as if image was mapped on a vertical cylinder.



• **Vertical**: as if image was mapped on a horizontal cylinder.

Angle of view

Camera angle of view (0 - 180°)

3/29/25, 9:20 PM 5.12. Spherize



Curvature

Spherical cap angle, as a fraction of the co-angle (complement angle) of view. Result is less domed as curvature decreases (100% - 0).



Amount

Interesting for negative values, which result in a hollow instead of a bump (from 1.000 to -1.000).



Resampling methods

These interpolation methods are described in Interpolation.

5.12.4. Using Spherize filter

Drawing a selection before applying filter allows you to create another shape, such as a sphere: select Ellipse tool with the Fixed option checked; draw a circle; apply Spherize filter with the Use the selection as input selected. Invert selection and fill it with wanted background.

3/29/25, 9:20 PM 5.12. Spherize





5.11. Shift





5.13. Value Propagate

5.13. Value Propagate

5. Distort Filters



5.13. Value Propagate

5.13.1. Overview

Figure 17.81. Example for the Value Propagate filter



Original image



Filter "Value Propagate" applied

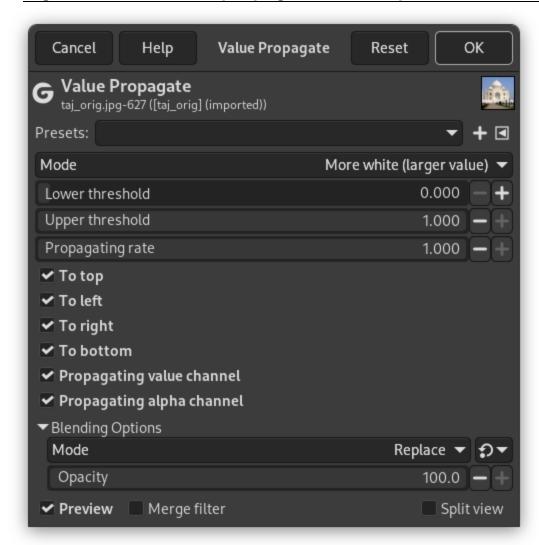
This filter works on color borders. It spreads pixels that differ in a specified way from their neighboring pixels.

5.13.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Distorts \rightarrow Value Propagate....

5.13.3. Options

Figure 17.82. "Value propagate" filter options

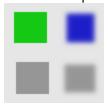


Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Mode

The examples will be about the following image:



More white (larger value)

Pixels will be propagated from upper value pixels towards lower value pixels. So bright areas will enlarge.

Figure 17.83. More white



Bright pixels have been propagated to dark pixels in the four directions: top, bottom, right and left. Filter applied several times to increase effect.

More black (smaller value)

Pixels will be propagated from lower value pixels towards upper value pixels. So dark areas will enlarge.

Figure 17.84. More black

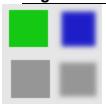


Figure 17.85. To bottom only



The same as above with To bottom direction only checked.

Middle value to peaks

On a border between the selected thresholds, the average of both values is propagated.

Figure 17.86. Middle value to peaks



A thin border with a transitional color has been added to objects. It is not visible around objects with smoothed borders.



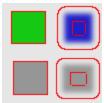
Green area zoomed x800. A thin border (one pixel wide) has been added. Its value is the average between gray (90%) and green (78%): (90 + 78) / 2 = 84.

Color to peaks

The propagated areas will be filled with the foreground color of the toolbox.

A color selector opens, with a color picker.

Figure 17.87. Color to peaks

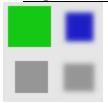


In this example, the selected color is Red. A thin border, one pixel wide, red, is added around objects. With smoothed objects, this border is located at the furthest limit of smoothing. Here, another border appears inside. This is an artifact due to the small size of the object which makes the smoothing area of opposite sides to overlap.

Only color

Only areas with the selected color will propagate. With this option, soft and fuzzy edges don't propagate well.

Figure 17.88. Only color



In this example, the selected color is that of the green object. After applying filter several times, the green area is clearly enlarged.

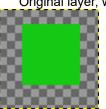
More opaque, More transparent

These commands work like "More white" and "More black". Opaque (transparent) areas will be propagated over less opaque (transparent) areas. These commands need an image with an alpha channel.

Figure 17.89. More opaque



Original layer, with a transparent background.



Filter applied several times: the green, opaque, area got increased.

Lower threshold, Upper threshold

A pixel will be propagated (spread) if the difference in value between the pixel and its neighbor is no smaller than the lower threshold and no larger than the upper threshold.

Propagating rate

That's the propagating amount. The higher it will be the more colored the propagation will be.

To top, To left, To right, To bottom

You can select one or more directions.

Propagating value channel

If checked, the pixel's color channels (gray channel on grayscaled images) will be propagated. The option is checked by default, of course.

Propagating alpha channel

If checked, the pixel alpha value will be propagated, otherwise the pixel will get the alpha of the neighboring pixels.

5.13.4. Using Value Propagate



Left: Original. Middle: More white. Right: More black.



5.12. Spherize



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5.14. Video Degradation

5.14. Video Degradation

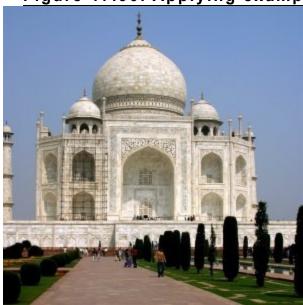
5. Distort Filters



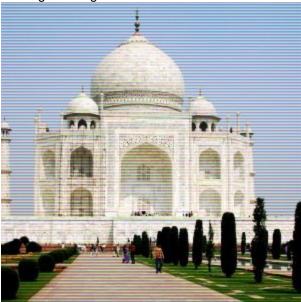
5.14. Video Degradation

5.14.1. Overview

Figure 17.90. Applying example for the "Video Degradation" filter



Original image



Filter "Video Degradation" applied

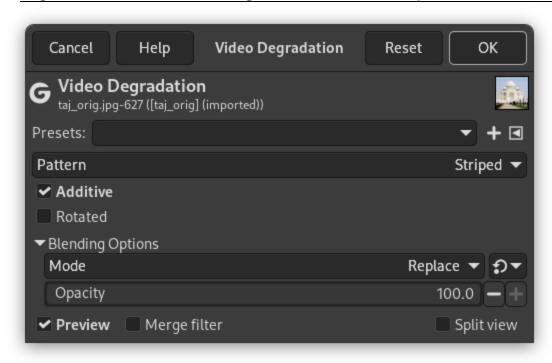
Apply low dot-pitch RGB simulation to the specified drawable.

5.14.2. Activating the Filter

You can find this filter through Filters \rightarrow Distorts \rightarrow Video Degradation....

5.14.3. Options

Figure 17.91. "Video Degradation" filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Pattern

It would be rather difficult to describe what each pattern will render. It's best to see what they render in the Preview.

Additive

Set whether the function adds the result to the original image.

Rotated

Rotate the result by 90°.



3/29/25, 9:20 PM 5.15. Waves

5.15. Waves





5.15. Waves

5.15.1. Overview

Figure 17.92. Example for the Waves filter



Original image



Filter "Waves" applied with default options and period = 20.0

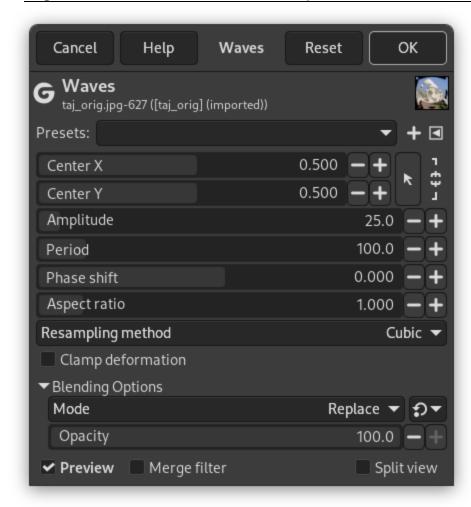
With this filter you get the same effect as a stone thrown in a quiet pond, giving concentric waves.

5.15.2. Activating the Filter

3/29/25, 9:20 PM 5.15. Waves

5.15.3. Options

Figure 17.93. "Waves" filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Center X. Center Y

Move the center of the waves

Amplitude

Varies the height of the waves.

Period

That is wavelength. Varies the distance between the top of waves.

The high default value suits large images. For images of some hundreds pixels wide and high, a lower value, such as 20 in our example, fits better.

Phase shift

This command shifts the top of the ripple.

Aspect ratio

Values less than 1.00 render waves oval, with major axis vertical. Values higher than 1.00 give a major axis horizontal.

Resampling method

These interpolation methods are described in <u>Interpolation</u>.

Clamp deformation

3/29/25, 9:20 PM 5.15. Waves

This limits the deformation in the image area. When this is disabled you seem to get transparent or black areas (depending on whether the layer has an alpha channel or not). When enabled, these areas will keep their normal color.

+

5.14. Video Degradation

1



5.16. Whirl and Pinch

3/29/25, 9:20 PM 5.16. Whirl and Pinch

5.16. Whirl and Pinch





5.16. Whirl and Pinch

5.16.1. Overview

Figure 17.94. Example for the Whirl and Pinch filter



Original image



Filter applied

[&]quot;Whirl and Pinch" distorts your image in a concentric way.

[&]quot;Whirl" (applying a non-zero Whirl angle) distorts the image much like the little whirlpool that appears when you empty your bath.

[&]quot;Pinch", with a nil rotation, can be compared to applying your image to a soft rubber surface and squeezing the edges or corners. If the Pinch amount slider is set to a negative value, it will look as if someone tried to push a round object

3/29/25, 9:20 PM 5.16. Whirl and Pinch

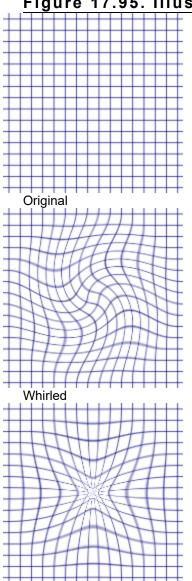
up toward you from behind the rubber skin. If the Pinch amount is set to a positive value, it looks like someone is dragging or sucking on the surface from behind, and away from you.



Tip

The "pinch" effect can sometimes be used to compensate for image distortion produced by telephoto or fish-eye lenses ("barrel distortion").

Figure 17.95. Illustration



5.16.2. Activating the Filter

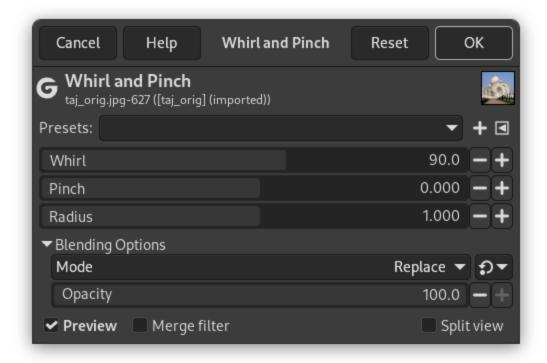
Pinched

This filter is found in the main menu under Filters \rightarrow Distorts \rightarrow Whirl and Pinch....

5.16.3. Parameter Settings

Figure 17.96. "Whirl and Pinch" filter options

3/29/25, 9:20 PM 5.16. Whirl and Pinch



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

Whirl

The clockwise or counter clockwise angle (-360 to +360). Controls how many degrees the affected part of the image is rotated.

Pinch

The pinch amount (-1 to +1) determines how strongly the affected part of the image is pinched.

Radius

Whirlpool width (0.0-2.0). Determines how much of the image is affected by the distortion. If you set *Radius* to 2, the entire image will be affected. If *you* set *Radius* to 1, half the image will be affected. If *Radius* is set to 0, nothing will be affected (think of it as the radius in a circle with 0 in the center and 1 halfway out).







5.15. Waves



5.17. Wind

5.17. Wind





5.17. Wind

5.17.1. Overview

Figure 17.97. "Wind" filter example



Original image



Filter "Wind" applied

The Wind filter can be used to create motion blur, but it can also be used as a general distort filter. What is characteristic about this filter is that it will render thin black or white lines. Wind will detect the edges in the image, and stretch out thin white or black lines from that edge. This is why you can create the illusion of motion, because the edges are what will be blurred in a photograph of a moving object.

5.17.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Distorts \rightarrow Wind....

5.17.3. Options

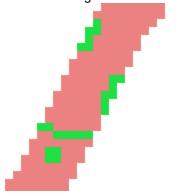
Figure 17.98. "Wind" filter options



The interface is quite simple. You can set the *Strength* of the wind and a *Threshold* value. *Threshold* will restrict the effect to fewer areas of the image. *Strength* controls the amount of wind, so a high value will render a storm. You can also increase the effect by setting the *Style* to Blast, which will produce thicker lines than Wind. You can only set the wind in two directions, either Left or Right. However, you can control which edge the wind will

come from using the values Leading, Trailing or Both. Because Trailing will produce a black wind, it creates a less convincing motion blur than Leading, which will produce white wind.

The following illustrations are based on this image:



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

Style

Wind

This option is the most suggestive of a moving effect. Trails are thin.

Blast

This option tries to suggest a blast due to an explosion. Trails are thick.



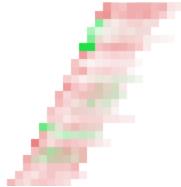
Direction

You can select the direction, Left or Right, from which the wind comes.

Edge Affected

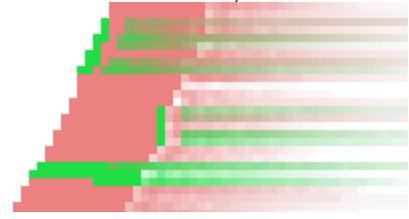
Leading

Trails will start from the front border, falling on the object itself. It suggests that a violent wind is pulling color out.



Trailing

Trails start from the back border of the object.



Both

Combines both effects.



Threshold

The threshold to detect borders. The higher it is, the fewer borders will be detected.

Strength

Higher values increase the strength of the effect.

Random seed, New Seed

This option controls the randomness of the filter. The Random seed box lets you manually enter a seed for the randomization algorithm used. You can also generate a random seed by pressing the New Seed button. If the same random seed is used in the same situation, the filter produces exactly the same results. A different random seed produces different results.







5.16. Whirl and Pinch



5.18. Blinds

3/29/25, 9:21 PM 5.18. Blinds

5.18. Blinds







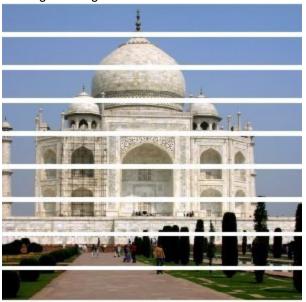
5.18. Blinds

5.18.1. Overview

Figure 17.99. Applying example for the Blinds filter



Original image



Filter "Blinds" applied

It generates a blind effect with horizontal or vertical battens. You can lift or close these battens, but not lift the whole blind up.

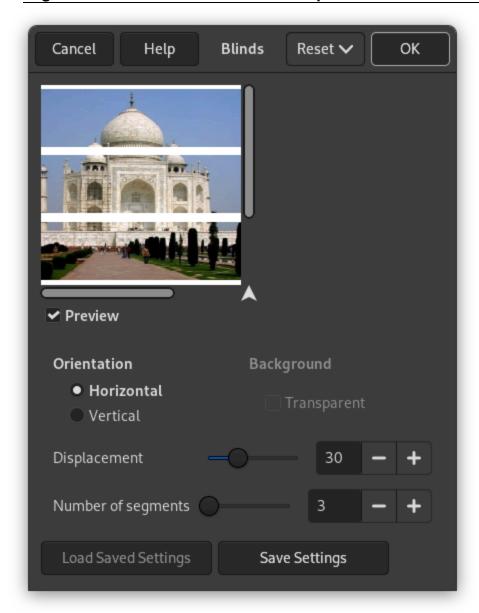
5.18.2. Activating the filter

3/29/25, 9:21 PM 5.18. Blinds

This filter is found in the main menu under Filters \rightarrow Distorts \rightarrow Blinds....

5.18.3. Options

Figure 17.100. "Blinds" filter options



Preview

All your setting changes will appear in the Preview without affecting the image until you click on OK.

Orientation

Allows you to decide whether battens will be horizontal or vertical.

Background

The batten color is that of the Toolbox Background. To be able to use the *Transparent* option, your image must have an Alpha channel.

Displacement

Slider and input box allow to wide battens giving the impression they are closing, or to narrow them, giving the impression they are opening. Specified as an angle from 0 to 90°.

Number of segments

It's the number of battens.

3/29/25, 9:21 PM 5.18. Blinds



5.17. Wind





5.19. Curve Bend

3/29/25, 9:21 PM 5.19. Curve Bend

5.19. Curve Bend

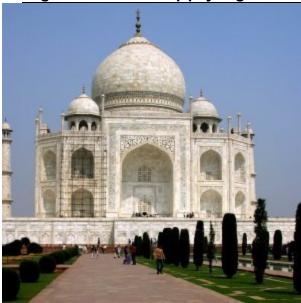




5.19. Curve Bend

5.19.1. Overview

Figure 17.101. Applying example for the Curve Bend filter







Filter "Curve Bend" applied

This filter allows you to create a curve that will be used to distort the active layer or selection. The distortion is applied gradually from an image or selection border to the other.

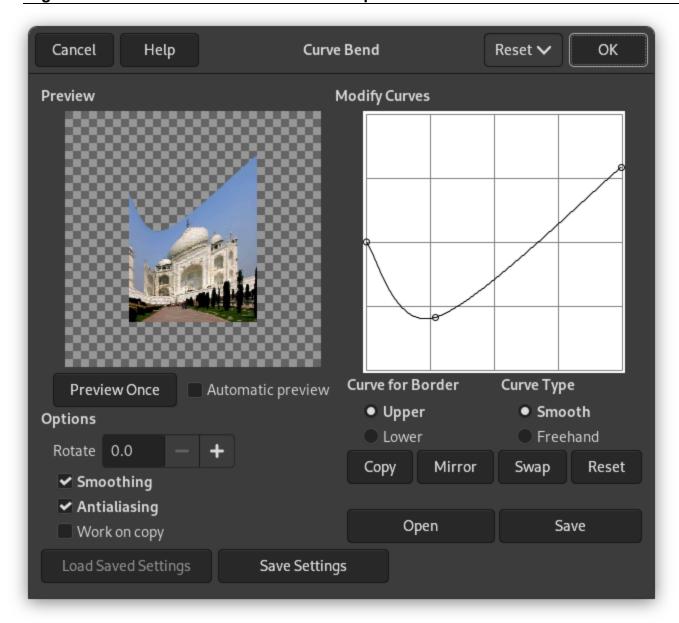
5.19.2. Activating the Filter

3/29/25, 9:21 PM 5.19. Curve Bend

This filter is found in the main menu under Filters \rightarrow Distorts \rightarrow Curve Bend....

5.19.3. Options

Figure 17.102. "Curve bend" filter options



Preview

The preview displays changes to image or selection without modifying the image until you press OK.

Preview once

This button allows you to update the preview each time you need it.

Automatic Preview

With this option, preview is changed in real time. This needs much calculation and may lengthen work. It is particularly evident when using "Rotation".

Options

Rotate

There, you can set the application angle of filter (0-360 counter-clockwise). 0 is default setting: The curve will be applied from the upper border and/or from the lower. Set to 90, it will be applied from left border and/or from the

5 19 Curve Bend 3/29/25, 9:21 PM

right one.

Smoothing, Antialiasing

The distort process may create hard and stepped borders. These two options improve this aspect.

Work on copy

This option creates a new layer called "Curve bend dummy layer b" which becomes the active layer, allowing you to see changes to your image in normal size without modifying the original image until you press the OK button.

Modify Curves

In this grid, you have a marked horizontal line, with a node at both ends, which represents by default the upper border of image. If you click on this curve, a new node appears, that you can drag to modify the curve as you want. You can create several nodes on the curve.

You can have only two curves on the grid, one for the so named "upper" border and the other for the so named "lower" border. You can activate one of them by checking the Upper or Lower radio button.

If you use the Free Curve Type option, the curve you draw will replace the active curve.

Curve for Border

There you can select whether the active curve must be applied to the Upper or the Lower border, according to the rotation.



Caution

Remember that the curve border depends on the rotation. For example, with Rotate = 90° the upper curve will actually be applied to the left border.

Curve Type

With the Smooth option, you get automatically a well rounded curve when you drag a node. The Free option allows you to draw a curve freely. It will replace the active curve.

Buttons

Copy

Copy the active curve to the other border.

Mirror

Mirror the active curve to the other border.

Swap

Swap the Upper and Lower curves.

Reset

Reset the active curve.

Open

Load the curve from a file.

Save

5.18. Blinds

Save the curve to a file.







5.20. Page Curl

3/29/25, 9:21 PM 5.20. Page Curl

5.20. Page Curl





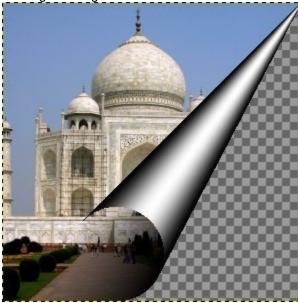
5.20. Page Curl

5.20.1. Overview

Figure 17.103. Example for the Page Curl filter







Filter "Page Curl" applied

This filter curls a corner of the current layer or selection into a kind of cornet showing the underlying layer in the cleared area. A new "Curl Layer" and a new Alpha channel are created. The part of the initial layer corresponding to this cleared area is also transparent.

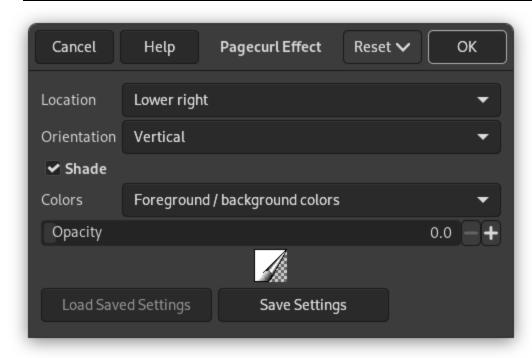
5.20.2. Activating the Filter

3/29/25, 9:21 PM 5.20. Page Curl

This filter is found in the main menu under Filters \rightarrow Distorts \rightarrow Page Curl....

5.20.3. Options

Figure 17.104. "Page Curl" filter options



Location

You have four options to select the corner you want to raise.

Orientation

Horizontal and Vertical refer to the border you want raise.

Shade

This is the shadow inside the cornet.

Colors

This refers to the outer face of the cornet. Available options are Foreground / background colors, Current gradient, and Current gradient (reversed).

Opacity

Refers to the visibility of the layer part underlying the cornet. It may be set also in the Layers dialog.



6. Light and Shadow Filters



Chapter 17. Filters



6. Light and Shadow Filters

6.1. Introduction

Light effect filters render several illumination effects of the image. Shadow effect filters create various kinds of shadows. This category describes the following filters:

- Section 6.2, "Bloom"
- Section 6.3, "Supernova"
- Section 6.4, "Lens Flare"
- Section 6.5, "Gradient Flare"
- Section 6.6, "Lighting Effects"
- Section 6.7, "Sparkle"
- Section 6.8, "Drop Shadow"
- Section 6.9, "Long Shadow"
- Section 6.10, "Vignette"
- Section 6.11, "Drop Shadow (legacy)"
- Section 6.12, "Perspective"
 Section 6.13, "Xach-Effect"
 Section 6.14, "Bevel"

- Section 6.15, "Inner Glow"







5.20. Page Curl



6.2. Bloom

3/29/25, 9:22 PM 6.2. Bloom

6.2. Bloom



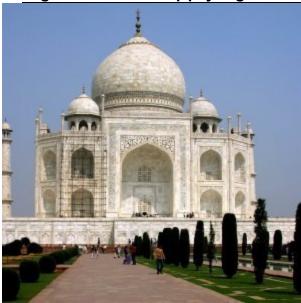
6. Light and Shadow Filters



6.2. Bloom

6.2.1. Overview

Figure 17.105. Applying example for the Bloom filter



Original image



Filter "Bloom" applied

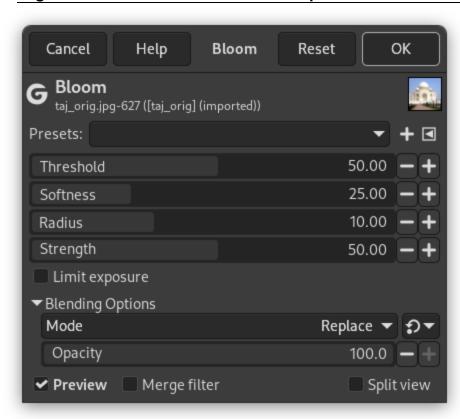
This filter adds a glow around bright areas.

6.2.2. Activating the Filter

3/29/25, 9:22 PM 6.2. Bloom

6.2.3. Options

Figure 17.106. "Bloom" filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

Threshold

Glow area brightness threshold.

Softness

Glow area edge softness.

Radius

The radius of the glow.

Strength

The strength of the glow.

Limit exposure

When enabled, it limits the exposure of highlights. This can be used to reduce the glow in areas that are over exposed.











3/29/25, 9:22 PM 6.3. Supernova

6.3. Supernova



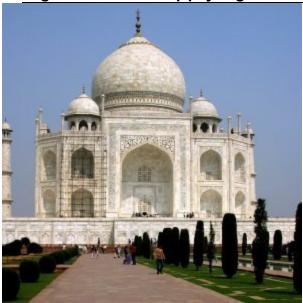
6. Light and Shadow Filters



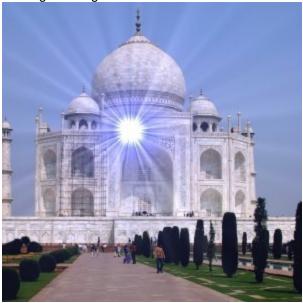
6.3. Supernova

6.3.1. Overview

Figure 17.107. Applying example for the Supernova filter



Original image



Filter "Supernova" applied

This filter creates a big star reminding a supernova. It works with RGB and GRAY images. Light effect decreases according to 1/r where r is the distance from star center.

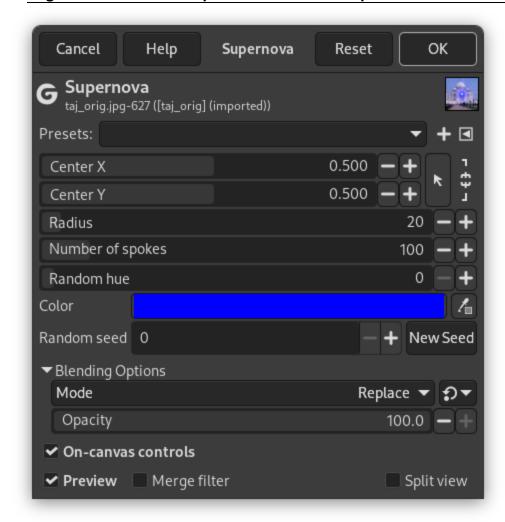
6.3.2. Activating the Filter

3/29/25, 9:22 PM 6.3. Supernova

This filter is found in the main menu under Filters → Light and Shadow → Supernova....

6.3.3. Options

Figure 17.108. "Supernova" filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



These options are described in Section 2, "Common Features".

Center X. Center Y

You can use input boxes to set horizontal (X) and vertical (Y) coordinates of Supernova center. You can also click and drag the supernova center in preview.

Radius

This is radius of the Supernova center: the upper limit seems to be unlimited. When you increase the value, you increase the number of central white pixels according to r*r (1, 4, 9, ...).

Radius is represented by a horizontal line in preview, with a cross at end. You can click and drag this cross to set radius.

Number of spokes

This is number of rays (1-1024). Each pixel in the nova center emit one pixel wide rays. All these rays are more or less superimposed resulting in this glittering effect you get when you move this slider.

Random hue

Color rays at random. (0-360) value seems to be a range in HSV color wheel.

Color

3/29/25, 9:22 PM 6.3. Supernova

When you click on the color swatch, you bring up the usual color selector.

You also have a color picker. When it is selected, the mouse pointer goes with a square on image: it's the color sample whose size you can modify in the GEGL operation window under Toolbox.

Random seed, New Seed

This option controls the randomness of the filter. The Random seed box lets you manually enter a seed for the randomization algorithm used. You can also generate a random seed by pressing the New Seed button. If the same random seed is used in the same situation, the filter produces exactly the same results. A different random seed produces different results.

♦ 6.2. Bloom 6.4. Lens Flare

3/29/25, 9:22 PM 6.4. Lens Flare

6.4. Lens Flare



6. Light and Shadow Filters



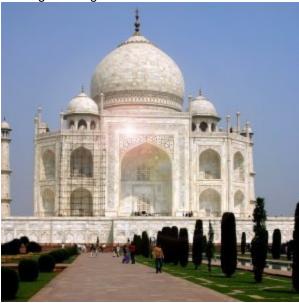
6.4. Lens Flare

6.4.1. Overview

Figure 17.109. Example for the Lens Flare filter



Original image



Filter "Lens Flare" applied

This filter gives the impression that sun hit the objective when taking a shot. You have not the possibilities that the <u>Gradient Flare</u> filter offers.

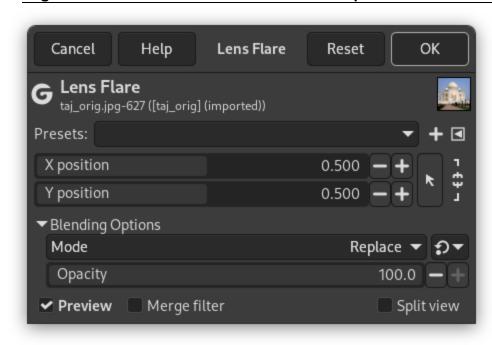
6.4.2. Activating the Filter

3/29/25, 9:22 PM 6.4. Lens Flare

This filter is found in the main menu under Filters \rightarrow Light and Shadow \rightarrow Lens Flare.

6.4.3. Options

Figure 17.110. "Lens Flare" filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

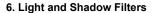
X position, Y position

You can set X and Y coordinates of glint using the input box. The coordinate origin is at the upper left corner. Position is ratio of the image dimension (0.500 is the middle, 1.000 the right or bottom border; it can be set outside of the canvas).





6.5. Gradient Flare





6.5. Gradient Flare

6.5.1. Overview

Figure 17.111. Example for the Gradient Flare filter







Filter "Gradient Flare" applied

Gradient Flare effect reminds the effect you get when you take a photograph of a blinding light source, with a halo and radiations around the source. The Gradient Flare image has three components: *Glow* which is the big central fireball, *Rays* and *Second Flares*

6.5.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Light and Shadow \rightarrow Gradient Flare....

6.5.3. Options

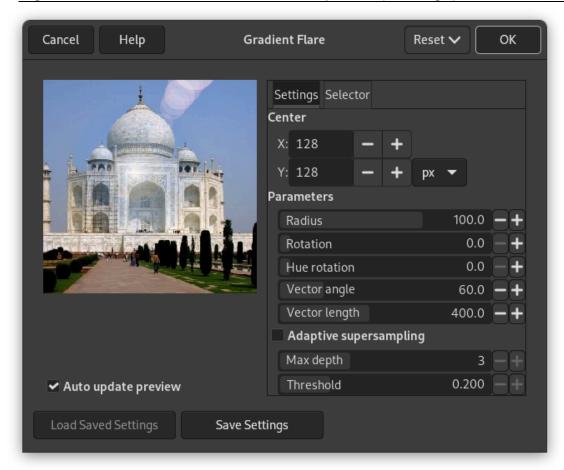
The Settings tab allows you to set manually the parameters while the Selector tab let you choose presets in a list.

Preview

When Auto update preview is checked, parameter setting results are interactively displayed in preview without modifying the image until you click on OK button.

6.5.3.1. Settings

Figure 17.112. "Gradient Flare" filter options (Settings)



Center

You can set X and Y (pixels) coordinates of glint using the input box or by clicking into the preview. The coordinate origin is at the upper left corner.

Parameters

Radius

The radius of the effect. The slider limits the range of possible values, but using the input box you can enter greater values.

Rotation

Turn the effect.

Hue rotation

Change the tint (color) of the effect.

Vector angle

Turn the Second flares.

Vector length

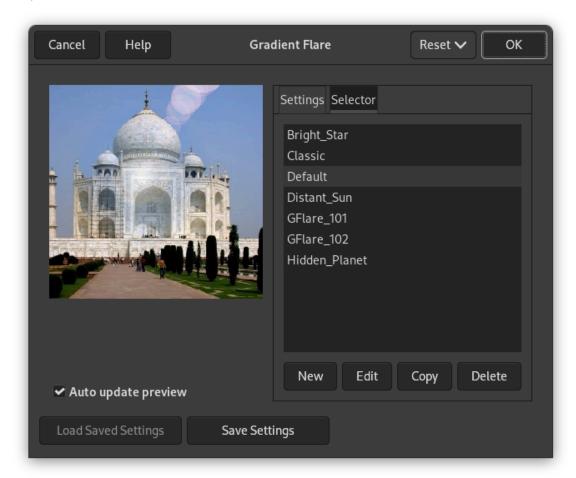
Vary the distance applied for the Second flares.

Adaptive supersampling

Settings of the anti-aliasing following parameters like Depth and Threshold. (See also Supersampling.)

6.5.3.2. Selector

Figure 17.113. "Gradient Flare" filter options (Selector)



The Selector tab allows you to select a Gradient Flare pattern, to change it and save it.

New

When you click on this button, you create a new Gradient Flare pattern. Give it a name of your choice.

Edit

This button brings up the **Gradient Flare Editor** (see below).

Сору

This button allows you to duplicate selected Gradient Flare pattern. You can edit the copy without altering the original.

Delete

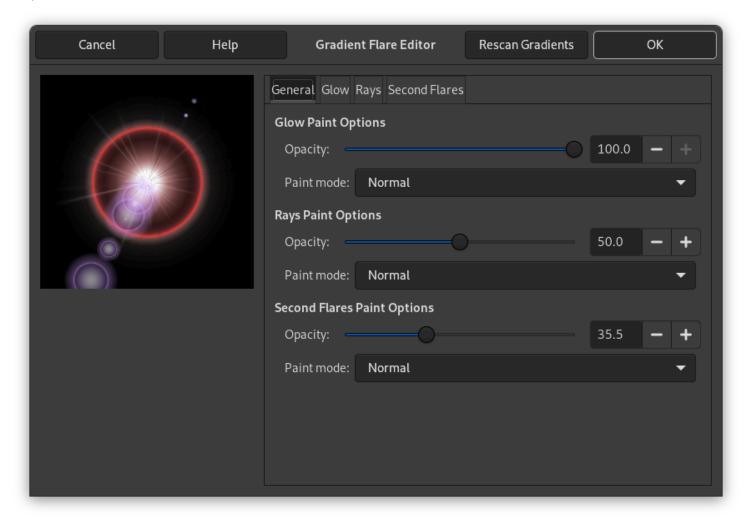
This button deletes the selected Gradient Flare pattern.

6.5.4. Gradient Flare Editor

The Gradient Flare Editor is also organized in tabs:

6.5.4.1. General

Figure 17.114. "Gradient Flare Editor" options (General)



Glow Paint Options

Opacity

Slider and input box allows you to reduce glow opacity (0-100).

Paint mode

You can choose between four modes:

Norma

In this mode, the glow covers the image without taking into account what is beneath.

Addition

Pixel RGB values of glow are added to RGB values of the corresponding pixels in the image. Colors get lighter and white areas may appear.

Overlay

Light/Dark areas of glow enhance corresponding light/dark areas of image.

Screen

Dark areas of image are enlightened by corresponding light areas of glow. Imagine two slides projected onto the same screen.

Rays Paint Options

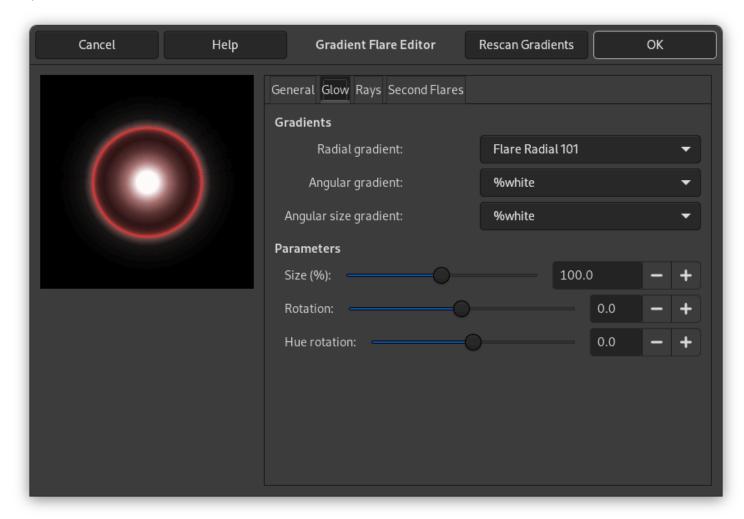
Options are the same as for Glow Paint Options .

Second Flare Paint Options

Options are the same as for Glow Paint Options.

6.5.4.2. Glow

Figure 17.115. "Gradient Flare Editor" options (Glow)



Gradients

By clicking on the rectangular buttons, you can develop a long list of gradients. "%" gradients belong to the Editor.

Radial gradient

The selected gradient is drawn radially, from center to edge.

Angular gradient

The selected gradient develops around center, counter-clockwise, starting from three o'clock if the Rotation parameter is set to 0. Radial and angular gradients are combined according to the Multiply mode: light areas are enhanced and colors are mixed according to CMYK color system (that of your printer).

Angular size gradient

This is a gradient of radius size which develops angularly. Radius is controlled according to gradient Luminosity: if luminosity is zero (black), the radius is 0%. If luminosity is 100% (white), the radius is also 100%.

Parameters

Size (%)

Sets size of glow in percent (0-200).

Rotation

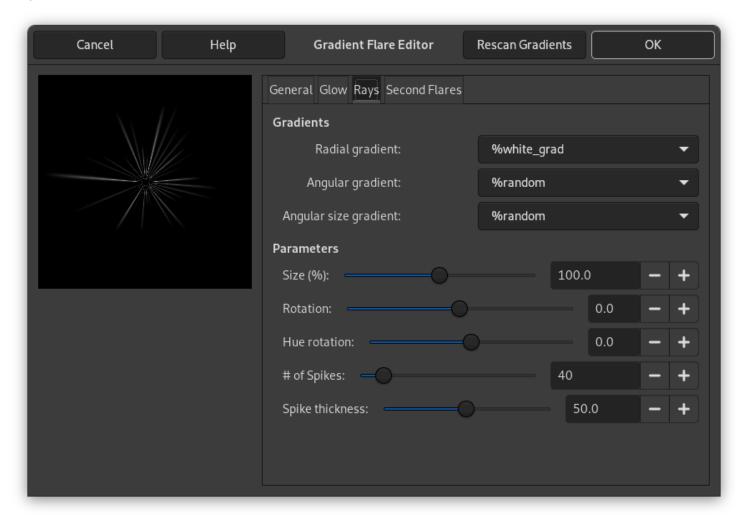
Sets the origin of the angular gradient (-180 +180).

Hue rotation

Sets glow color, according to the HSV color wheel (-180 +180). (Cf. The triangle color selector.)

6.5.4.3. Rays

Figure 17.116. "Gradient Flare Editor" options (Rays)



Gradients

The options are the same as for Glow.

Parameters

The first three options are the same as in Glow. Two are new:

of Spikes

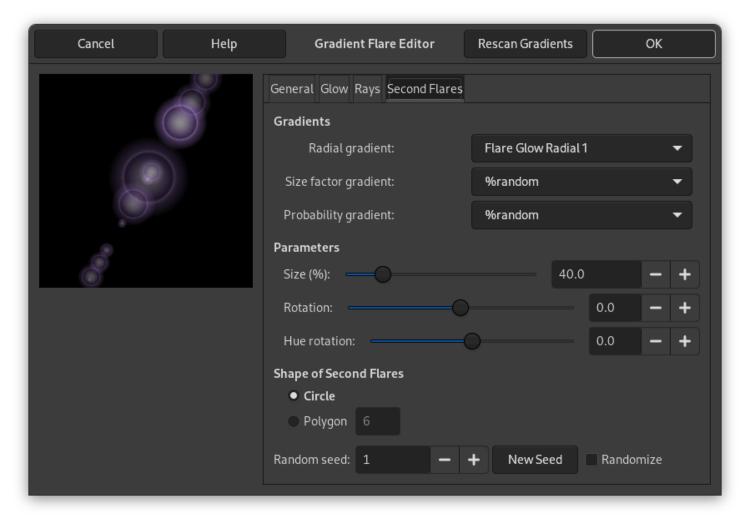
This option determines the number of spikes (1-300) but also their texture.

Spike thickness

When spikes get wider (1-100), they look like flower petals.

6.5.4.4. Second Flares

Figure 17.117. "Gradient Flare Editor" options (Second Flares)



Gradients

The options are the same as for Glow.

Parameters

Options are the same as in Glow.

Shape of Second Flares

Second flares, these satellites of the main flare, may have two shapes: Circle and Polygon. You can set the *Number* polygon sides. The option accepts 1 side (!), not 2.

Random seed, New Seed

This option controls the randomness of the filter. The Random seed box lets you manually enter a seed for the randomization algorithm used. You can also generate a random seed by pressing the New Seed button. If the same random seed is used in the same situation, the filter produces exactly the same results. A different random seed produces different results.

Randomize

When you click on this button, you produce a random seed that will be used by the random generator. It is each time different.



3/29/25, 9:24 PM 6.6. Lighting Effects

6.6. Lighting Effects

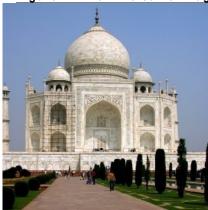
6. Light and Shadow Filters



6.6. Lighting Effects

6.6.1. Overview

Figure 17.118. The same image, before and after applying Lighting filter



Original image



Filter "Lighting Effects" applied

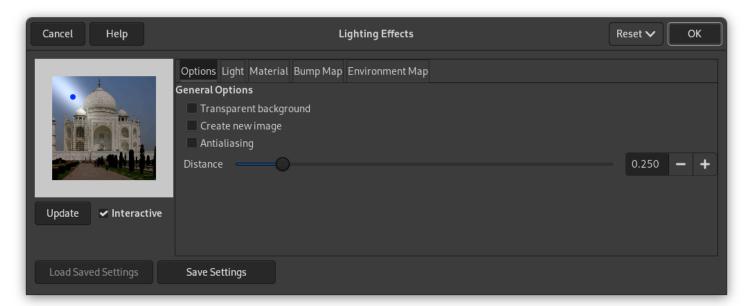
This filter simulates the effect you get when you light up a wall with a spot. It doesn't produce any drop shadows and, of course, doesn't reveal any new details in dark zones.

6.6.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Light and Shadow \rightarrow Lighting Effects....

6.6.3. Options

Figure 17.119. "Lighting" filter options



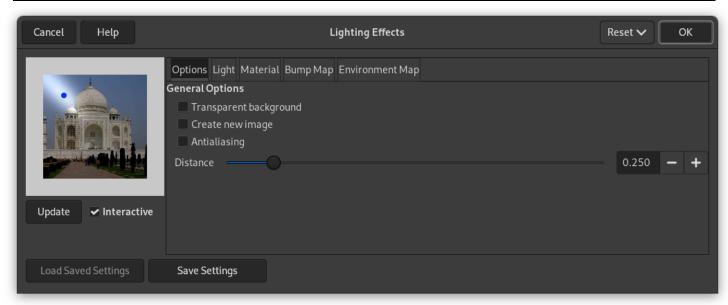
Preview

When Interactive is checked, parameter setting results are interactively displayed in preview without modifying the image until you click on OK button. If Interactive is not checked, changes are displayed in preview only when you click on the Update button. This option is useful with a slow computer.

Any other options are organized in tabs:

6.6.3.1. General Options

Figure 17.120. "Lighting" filter options (General Options)



Transparent background

Makes destination image transparent when bumpmap height is zero (height is zero in black areas of the bumpmapped image).

Create new image

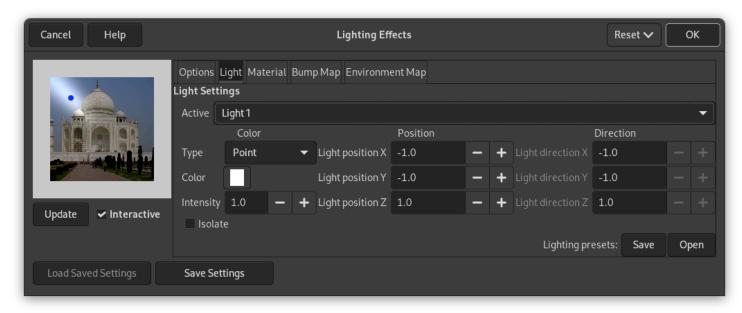
Creates a new image when applying filter.

Distance

You can specify the distance of the light source from the center of the image with this slider. The range of values is from 0.0 to 2.0.

6.6.3.2. Light Settings

Figure 17.121. "Lighting" filter options (Light Settings)



In this tab, you can set light parameters. With Light 1 to Light 6 you can create six light sources and work on each of them separately.

Туре

The filter provides several *light types* in a drop-down list:

This deletes the light source (light may persist).

Directional

The blue point is linked to preview center by a line which indicates the direction of light.

Point

Displays a blue point at center of preview. You can click and drag it to move light all over the preview.

Spot

Displays a blue point that cannot be moved. This light has a fixed direction.

Color

When you click on the color swatch, you bring a dialog up where you can select the light source color.

Intensity
With this option, you can set light intensity.

Position

Determines the light point position according to three coordinates: X coordinate for horizontal position, Y for vertical position, Z for source distance (the light darkens when distance increases). Values are from -1 to +1.

Direction

This option should allow you to fix the light direction in its three X, Y and Z coordinates.

Isolate

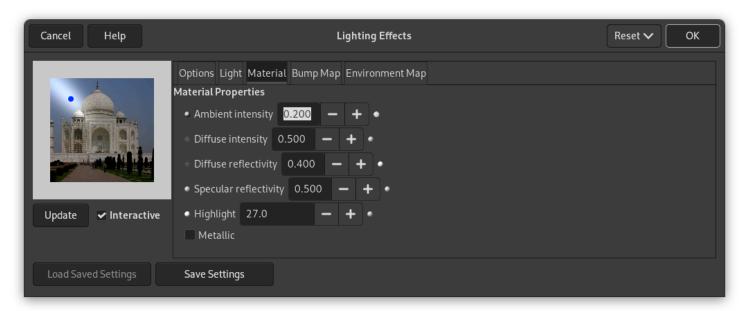
With this option, you can decide whether all light sources must appear in the Preview, or only the source you are working on.

Lighting presets

You can save your settings with the Save and get them back later with the Open.

6.6.3.3. Material Properties

Figure 17.122. "Lighting" filter options (Material Properties)



These options don't concern light itself, but light reflected by objects.

Small spheres, on both ends of the input boxes, represent the action of every option, from its minimum (on the left) to its maximum (on the right). Help pop ups are more useful.

Ambient intensity

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This option, also known as glowing, controls the amount of the original color to show where no direct light falls.

Diffuse intensity

This option, also known as brightness, controls the intensity of the original color to show when hit directly by a light source.

Diffuse reflectivity

This option controls how intense the light from the original color will be reflected.

Specular reflectivity

This option controls how intense the highlight will be.

Highlight

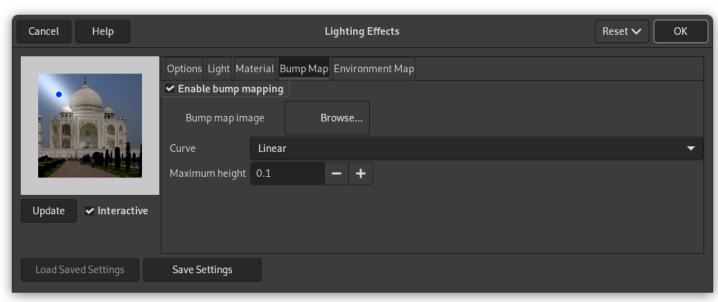
This option adjusts the polish or highlight. Higher values make the highlight more focused.

Metallic

When this option is checked, surfaces look metallic.

6.6.3.4. Bump Map

Figure 17.123. "Lighting" filter options (Bump Map)



In this tab, you can set filter options that give relief to the image. See **Bump mapping**.

Enable bump mapping

With this option, bright parts of the image will appear raised and dark parts will appear depressed. The aspect depends on the light source position.

Bump map image

Select a grayscale image to use as a bump map. See the Bump Map plug-in for more information.

Curve

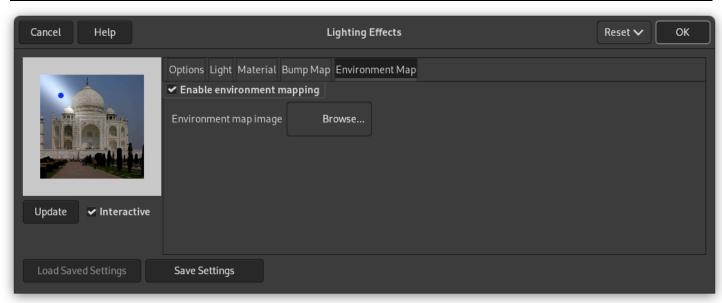
This option defines the method that will be used when applying the bump map; that is, the bump height is a function of the specified curve. Four curve types are available: Linear, Logarithmic, Sinusoidal and Spherical.

Maximum height

This is the maximum height of bumps.

6.6.3.5. Environment Map

Figure 17.124. "Lighting" filter options (Environment Map)



Enable environment mapping When you check this box, the following option is enabled:

Environment image

Select a RGB image to be used as environment map. Please note that for this option to work you should load another image with GIMP before using it. An example can be found at [BUDIG01].



3/29/25, 9:24 PM 6.7. Sparkle

6.7. Sparkle



6. Light and Shadow Filters



6.7. Sparkle

6.7.1. Overview

Figure 17.125. Applying example for the Sparkle filter



Original image



Filter "Sparkle" applied

This filter adds sparkles to your image. It uses the lightest points according to a threshold you have determined. It is difficult to foresee where sparkles will appear. But you can put white points on your image where you want sparkles to be.

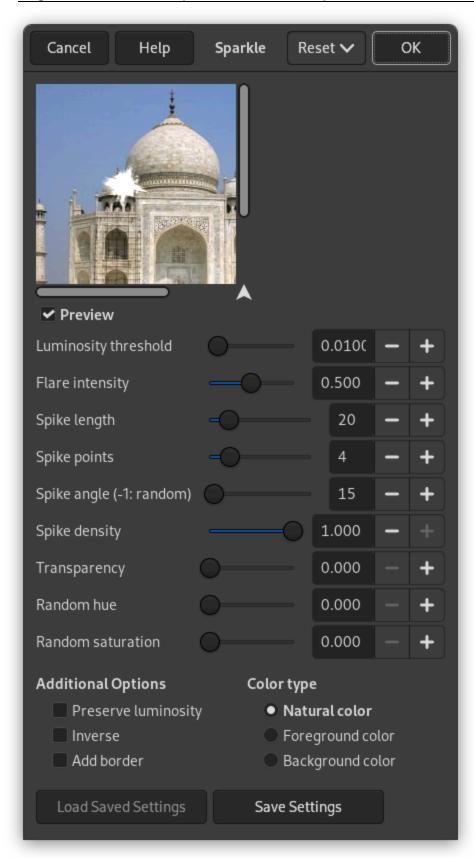
6.7.2. Activating the Filter

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This filter is found in the main menu under Filters \rightarrow Light and Shadow \rightarrow Sparkle....

6.7.3. Parameter Settings

Figure 17.126. "Sparkle" filter options



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Sliders and input boxes allow you to set values.

Preview

If checked, parameter setting results are interactively displayed in preview. Scroll bars allow you to move around the image.

Luminosity threshold

The higher the threshold, the more areas are concerned by sparkling (0.0-0.1).

Flare intensity

When this value increases, the central spot and rays widen (0.0-1.0).

Spike length

This is ray length (1-100). When you reduce it, small spikes decrease first.

Spike points

Number of starting points for spikes (0-16). It's the number of big spikes. There is the same number of small spikes. When number is odd, small spikes are opposite the big ones. When number is even, big spikes are opposite another big spike.

Spike angle

This is angle of first big spike with horizontal (-1 +360). -1 determines this value at random. If a spot has several pixels within required threshold, each of them will generate a sparkle. If angle is positive, they will all be superimposed. With -1, each sparkle will have a random rotation resulting in numerous thin spikes.

Spike density

This option determines the number of sparkles on your image. It indicates the percentage (0.0-1.0) of all possible sparkles that will be preserved.

Transparency

When you increase transparency (0.0-1.0), sparkles become more transparent and the layer beneath becomes visible. If there is no other layer, sparkle saturation decreases.

Random hue

This option changes sparkle hue at random (0.0-1.0).

Random saturation

This option changes sparkle saturation at random (0.0-1.0).

Preserve luminosity

Gives to all central pixels the luminosity of the brightest pixel, resulting in increasing the whole sparkle luminosity.

Inverse

Instead of selecting brightest pixels in image, Sparkle will select the darkest ones, resulting in dark sparkles.

Add border

Instead of creating sparkles on brightest pixels, this option creates an image border made up of numerous sparkles.

Natural color, Foreground color, Background color

You can change there the color of central pixels. This color will be added in Screen mode (Multiply if Inverse is checked). "Natural color" is the color of the pixel in the image.









6.8. Drop Shadow

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6.8. Drop Shadow



6. Light and Shadow Filters



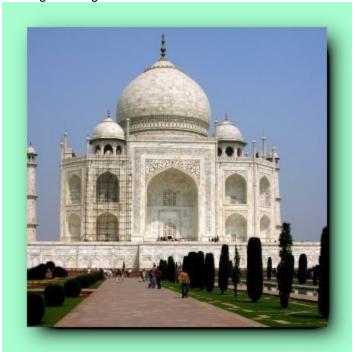
6.8. Drop Shadow

6.8.1. Overview

Figure 17.127. Example for the "Drop Shadow" filter



Original image



Using the GEGL "Drop Shadow"

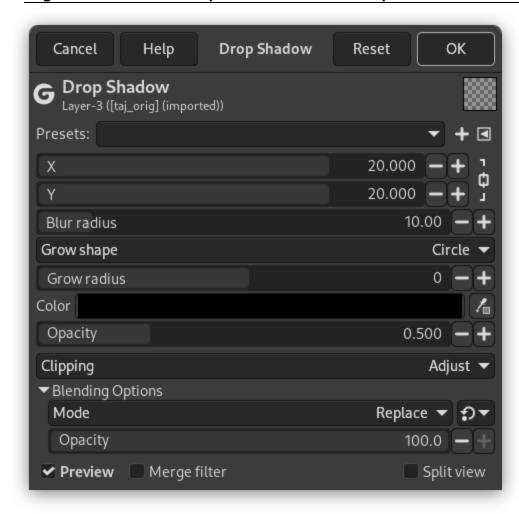
With this GEGL filter you can add a drop-shadow to an image, a selection or a text. You may choose the color, position, and size of the shadow.

6.8.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Light and Shadow \rightarrow Drop Shadow.... It is available if your image holds an Alpha channel (see Section 7.36, "Add Alpha Channel"). Otherwise, it is disabled.

6.8.3. Options

Figure 17.128. "Drop Shadow" filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

X, Y

The layer containing the drop shadow will be moved horizontally by X pixels, vertically by Y pixels. So, X and Y offset determine where the shadow will be placed in relation to the image. High values make the imaginary source of light look like it's far away in horizontal or vertical direction, and low values will make it look closer to the image. The offsets may be negative, leading to a shadow on the left of the selection if offset X < 0, or above the selection if offset Y < 0.

Out of sheer curiosity, you can see the drop shadow layer clearly by setting blur radius to 0 and moving the drop shadow with X and Y.

Blur radius

After creating the shadow, a <u>Gaussian blur</u> with the specified radius is applied to the shadow layer, resulting in the realistic appearance of the drop shadow.

Grow shape

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You can choose the shape that will be used to expand or contract the shadow. The choices should be self explanatory: Circle (default), Square, or Diamond.

Grow radius

The distance to expand the shadow before blurring. A negative value will contract the shadow instead.

Color

You can choose the color of the shadow here. Just click on the color swatch, and select a color when the color selector pops up, or use the eye-dropper to pick a color from the image.

Opacity

Shadow opacity. It defaults to 0.500, but you may select any other value from 0 (full transparency) to 2.00 (full opacity) here.

6.8.4. Using Drop Shadow Filter

This GEGL Drop Shadow filter is surprising: if you apply the filter directly to the image as you do with the legacy filter, you get nothing, unless you have transparent areas in your image.

To get the same result as the legacy filter:

- 1. Open your original image.
- 2. Open a new image, a little bigger than your original image, filled with transparency.
- 3. Copy your original image and paste it into the new image. A floating selection is created in the Layers dialog.
- 4. Anchor the floating selection.
- 5. Select Layer → Crop Layers to Content.
- 6. Select Layer → Layer Boundary Size...: set layer size to the same size than your image and filled with transparency; click on the Center button. Then click on the Resize button.
- 7. Open the Drop Shadow dialog: the drop shadow is displayed in the on-canvas preview. You can change the default options values.
- 8. Eventually, add a new layer, with the same size as the image and filled with the color you want to give to the background. Move this layer to the bottom of the layer stack.
- 9. Click on the OK to apply filter.

Applying filter to a selection:

- 1. Open your original image.
- 2. Open a new image, the same size as your original image, filled with transparency.
- 3. Create the selection
- 4. Copy the selection and paste it into the new image. A floating selection is created in the Layers dialog.
- 5. Anchor the floating selection.
- 6. Select Layer → Crop Layers to Content.
- 7. Select Layer \rightarrow Layer to Image Size (with transparency).
- 8. Open the Drop Shadow dialog: the drop shadow is displayed in the on-canvas preview. You can change the default options values.
- 9. Eventually, add a new layer, with the same size as the image and filled with the color you want to give to the background. Move this layer to the bottom of the layer stack.
 - You can also use your original image as background: undo the selection, copy the image and paste it as new layer in the new image. Move the new layer to the bottom of the layer stack.
- 10. Click on the OK to apply filter.

Applying filter to a text:

The procedure is more simple to create a drop shadow for a text: create the text and apply the Drop Shadow filter directly.







6.7. Sparkle

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6.9. Long Shadow

6.9. Long Shadow



6. Light and Shadow Filters



6.9. Long Shadow

6.9.1. Overview

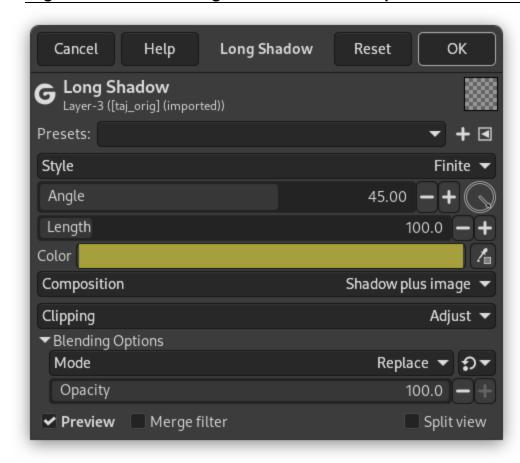
This GEGL-based filter simplifies creating long shadows in several visual styles.

6.9.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Light and Shadow \rightarrow Long Shadow.... It is available if the selected layer holds an Alpha channel (see <u>Section 7.36, "Add Alpha Channel"</u>). Otherwise, it is disabled.

6.9.3. Options

Figure 17.129. "Long Shadow" filter options



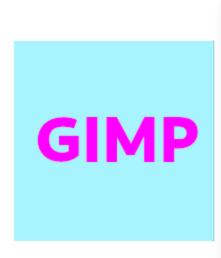
Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view

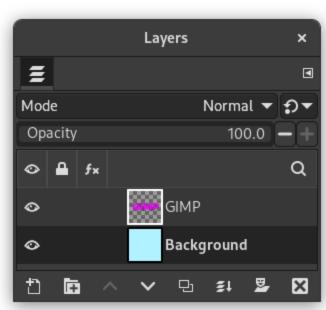


Note

These options are described in Section 2, "Common Features".

Style





Original file and its layers; the text layer was created via the "Layers to Image Size" function in the "Layer" menu. Finite is the default style. Other available styles are Infinite, Fading, and Fading (fixed length).

Figure 17.130. "Style" option examples





Fading



Fading (fixed length); length = 30

Angle

Shadow angle, in degrees.



Angle = 110°

Length

Shadow length, in pixels. Only available when Style is set to Finite or Fading (fixed length).



Length = 30

Midpoint

Shadow fade midpoint. Only available when Style is set to Fading or Fading (fixed length).

Color

You can choose the color of the shadow here. Just click on the color swatch, and select a color when the color selector pops up, or use the eye-dropper to pick a color from the image.

Composition

The "Output composition" selects how the output of this filter will be determined. There are three choices:

- Shadow plus image will output both the input image and the created shadow. This is the default.
- Shadow only will output only the created shadow.
- Shadow minus image will output the created shadow but subtracts the area hidden by the image.

Figure 17.131. "Composition" option examples













6.8. Drop Shadow

6.10. Vignette

6.10. Vignette



6. Light and Shadow Filters



6.10. Vignette

6.10.1. Overview

In photography, *vignetting* is a reduction of the image brightness toward periphery. It is often an undesired effect due to camera settings or lens limitations. But it is also deliberately used to draw attention to the center of the image. "Vignette" can produce this effect.

Figure 17.132. Original images used for examples



Original



Filter applied with default options

GIMP comes with on-canvas controls (default): two limits with white handles that turn to orange, and become active, when the mouse pointer hovers over them. The black (default) area is the *vignette*. The *outer limit* is the limit of the vignette. The *inner limit* is the limit of the *soft area*, the unchanged area. Between the outer and the inner limits is the *fade area*, where the vignette is fading progressively, with a dotted line that is the *midpoint line*.



Vignette with default options and on-canvas controls Click-and-drag action is different on lines and on handles:

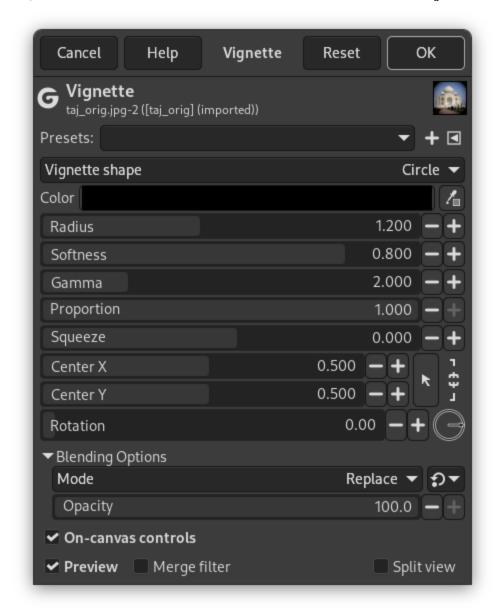
- Click-and-drag a limit line to move the limit and the midpoint (Radius and Softness).
- Click-and-drag a handle to move both limits (Radius and Squeeze).
- Click-and-drag the midpoint line to move it.
- In the three cases, pressing | **Shift** | only changes Radius.

6.10.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Light and Shadow \rightarrow Vignette....

6.10.3. Options

Figure 17.133. "Vignette" filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

Vignette shape

- Circle
- Square
- Diamond
- Horizontal, Vertical: limits and line are horizontal or vertical.

The shape of the vignette (ellipse or circle for example) depends on Proportion setting.

Radius

Vignette size: how far out vignetting goes as part of half image diagonal.



Radius = 0.700

Softness

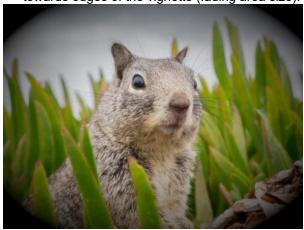
Soft (unchanged) area size.



Softness = 0.100

Gamma

Falloff linearity controls the curve of the falloff from the center to periphery: set how fast is brightness reduced towards edges of the vignette (fading area size).



Gamma = 1.00

Proportion

Proportion is particular: with the default value (maxi) 1.00, the vignette is a circle in a square image and an ellipse in a rectangular image. Reducing Proportion, this ellipse tends to a circle.

Squeeze

Aspect ratio to use:

- 0.0 = 1:1
- 0.5 = 2:1



Diamond shape, proportion = 0.0 and squeeze = 0.5

- 1.0 = completely squeezed vertically
- -0.5 = 1:2
- -1.0 = completely squeezed horizontally



Note

To directly use squeeze factor as proportion, set Proportion to 0.0.

Center X, Center Y

Coordinates of vignette center. Origin is the upper left corner of the image. 1.00 is the right border of the image. The center can be placed outside of the image.

Rotation

Rotation of the vignette. The vignette keeps its shape.

You can also click-and-drag outside the outer limit to rotate the vignette.

On-canvas controls

Uncheck this option to remove on-canvas controls.



6.9. Long Shadow

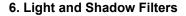






6.11. Drop Shadow (legacy)

6.11. Drop Shadow (legacy)





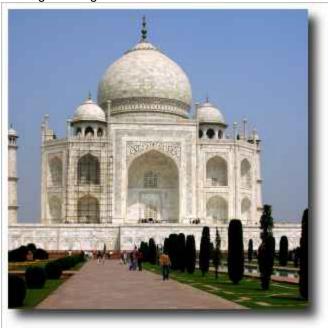
6.11. Drop Shadow (legacy)

6.11.1. Overview

Figure 17.134. Example for the "Drop Shadow (legacy)" filter



Original image



"Drop Shadow (legacy)" applied (white background layer added manually)

This filter adds a drop-shadow to the current selection or to the image if there's no active selection. Optional the filter resizes the image if that's necessary for displaying the shadow. You may choose the color, position, and size of the shadow.

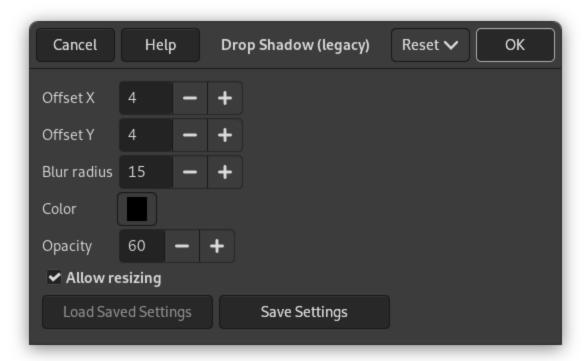
Please note that the filter does not add a background layer to make the shadow visible. The shadow's background is transparent. The white background in the above example has not been created by the filter, instead it has been added later to let you see the shadow.

6.11.2. Activating the Filter

This filter is found in the main menu under Filters → Light and Shadow → Drop Shadow (legacy)....

6.11.3. Options

Figure 17.135. "Drop Shadow (legacy)" filter options



Offset X, Offset Y

The layer containing the drop shadow will be moved horizontally by X pixels, vertically by Y pixels. So, X and Y offset determine where the shadow will be placed in relation to the image. High values make the imaginary source of light look like it's far away in horizontal or vertical direction, and low values will make it look closer to the image. The offsets may be negative, leading to a shadow on the left of the selection if offset X < 0, or above the selection if offset Y < 0.

If there's no active selection, you must have Allow resizing enabled to see any effect.

Blur radius

After creating the shadow, a <u>Gaussian blur</u> with the specified radius is applied to the shadow layer, resulting in the realistic appearance of the drop shadow. It may be necessary to enable Allow resizing, since blurring extends the shadow.

Color

The shadow may have any color. Just click on the button, and select a color when the color selector pops up.

Figure 17.136. "Drop Shadow" color example



Opacity

The shadow's opacity is just the opacity of the new layer containing the shadow (see <u>Section 1.1, "Layer Properties"</u>). It defaults to 80%, but you may select any other value from 0 (full transparency) to 100 (full opacity) here. After applying the filter to an image you can change the opacity in the <u>layers dialog</u>.

Allow resizing

If enabled, the filter will resize the image if that is needed to make place for the shadow. The new size depends on the size of the selection, the blur radius, and the shadow offsets.



6.10. Vignette







6.12. Perspective

6.12. Perspective



6. Light and Shadow Filters



6.12. Perspective

6.12.1. Overview

Figure 17.137. Example for the "Perspective" filter



Original image



"Perspective" applied

This filter adds a perspective shadow to the selected region or alpha-channel as a layer below the active layer. You may select color, length and direction of the shadow as well as the distance of the horizon.

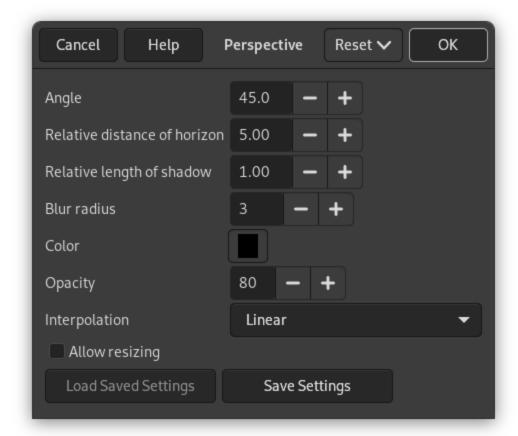
If necessary, the filter may resize the image. But it will not add a background to make the shadow visible.

6.12.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Light and Shadow \rightarrow Perspective....

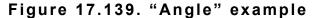
6.12.3. Options

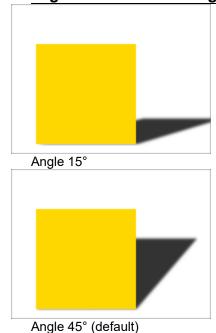
Figure 17.138. "Perspective" options

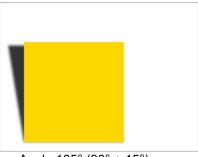


Angle

The angle determines the direction of the shadow or the imaginary source of light, respectively. Values range from 0° to 180°, where 90° represents a light source just in front of the selection or layer. For angles less than 90°, the shadow is at the right side, so the light source is on the left. For angles greater than 90°, it's the other way round. Tip: think of the slider's handle as source of light.





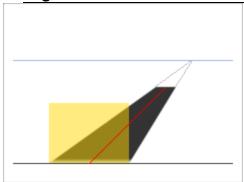


Angle 105° (90° + 15°)

Relative distance of horizon

This option determines how far away the imaginary horizon is. The relative distance is the distance from the ground-line of the selection or layer, the "unit" of measurement is the height of the selection or layer. Value range is from 0.1 to 24.1, where 24.1 means (nearly) "infinite". Note that the relative length of shadow must not exceed the distance of horizon.

Figure 17.140. "Distance of horizon" example



Angle = 45°. Distance = 2.4. Length = 1.8.

In the example above, the yellow area is the selection the filter is applied to. The blue line at the top represents the imaginary horizon. The angle between the selection's ground-line and the red line is 45°. The length of the red line is 1.8 times the height of the yellow selection. Extended to the horizon, the length is 2.4 times the selection's height.

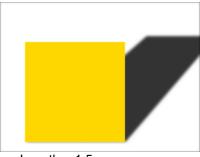
Relative length of shadow

With this option you can set the length of shadow with respect to the height of the selection or layer. In the above example, the red line represents the length of shadow, its length is 1.8 relative to the height of the vellow selection. Value range is from 0.1 to 24.1, although the length of shadow must not exceed the relative distance of horizon - you can't go beyond the horizon.

Figure 17.141. "Length of Shadow" example



Length = 1.0 (default)

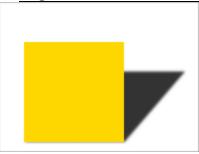


Length = 1.5

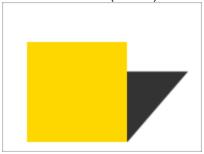
Blur radius

After creating the shadow, a <u>Gaussian blur</u> with the specified radius is applied to the shadow layer, resulting in the realistic appearance of the shadow.

Figure 17.142. Blur example



Blur radius = 3 (default)



Without blur (blur radius = 0)

Color

Of course, the default color of the shadow is black. But a click on the button opens the color selector, where you may select any other color.

Opacity

The shadow's opacity is the opacity of the new layer containing the shadow (see <u>Section 1.1, "Layer Properties"</u>). It defaults to 80%, but you may select any other value from 0 (full transparency) to 100 (full opacity) here. After applying the filter to an image you can change the opacity in the <u>Layers Dialog</u>.

Interpolation

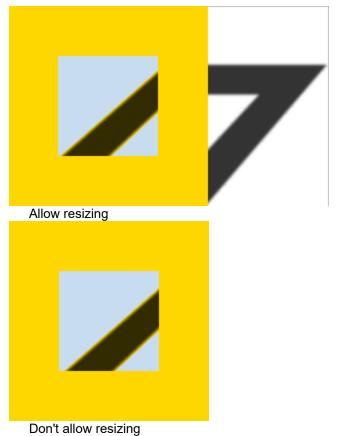
This drop-down list lets you choose the method of interpolation used when the shadow layer is transformed, for example rotated by the specified angle. Using None will usually result in aliasing, using any interpolation method may change the color of the shadow in some areas. Linear is a good choice.

Allow resizing

If enabled, the filter will resize the image if that is needed to make place for the shadow.

In the example below, the yellow area is the active selection, background is light blue. The white area has been added after resizing to make the shadow visible.

Figure 17.143. "Allow resizing" example







6.11. Drop Shadow (legacy)

Report a bug in GIMP Report a documentation error







6.13. Xach-Effect

6.13. Xach-Effect



6. Light and Shadow Filters



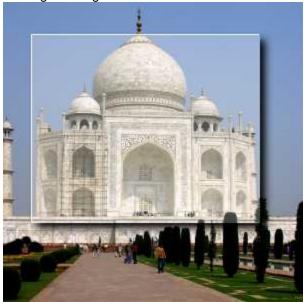
6.13. Xach-Effect

6.13.1. Overview

Figure 17.144. Example for the "Xach-Effect" filter



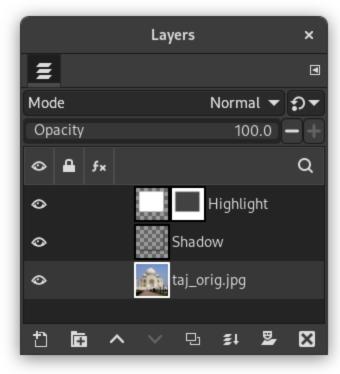
Original image



"Xach-Effect" applied

This filter adds a subtle translucent 3D effect to the selected region or alpha channel. This 3D effect is achieved by

1. Highlighting the selection: a new layer ("Highlight") will be created above the active layer, filled with the highlight color. Then a <u>layer mask</u> will be added to that layer making the unmasked pixel partially transparent.



Highlight layer with layer mask

- 2. Painting the selection's left and top edges with the highlight color: for that the "Highlight" layer will be extended by one pixel left and up. These small areas will be opaque.
- 3. Creating a <u>drop shadow</u> at the bottom right side of the selection.

You may vary these default settings, for example select different colors for highlight or shadow and change amount and directions of offsets.

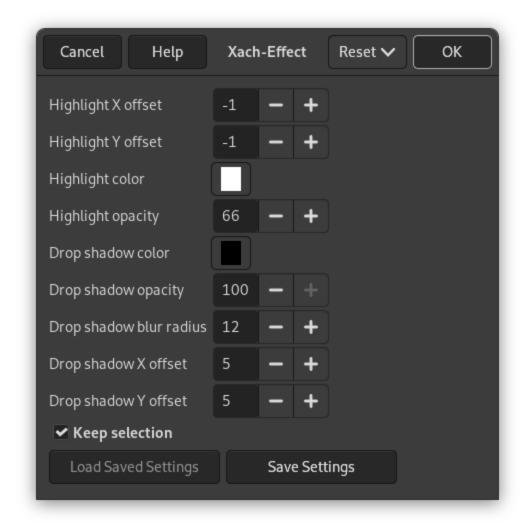
6.13.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Light and Shadow \rightarrow Xach-Effect....

6.13.3. Options

There are two groups of options, each controlling the highlight or the shadow, and a checkbox for the selection behaviour.

Figure 17.145. "Xach-Effect" options



Highlight X offset, Highlight Y offset

The selection's left and top edge are painted with the highlight color. The highlight offset is the size (width or height) of the respective area. If offset is less than 0 (this is the default), the left (X offset < 0) or top (Y offset < 0) area will be colored. If offset is greater than 0, the right (X offset > 0) or bottom (Y offset > 0) area will be painted.

Highlight color

This is the color used to highlight the selected area. It defaults to white, but clicking on the swatch button brings up a color selector and you may select any other color.

Highlight opacity

The selection will be covered by a partially transparent area filled with the highlight color. This option lets you set the level of transparency. Since a <u>layer mask</u> will be used, the value ranges from 0 (full transparency) to 255 (full opacity).

The highlight opacity defaults to 66, which is equivalent to 26%.

Drop shadow options

These options work like the respective Drop Shadow options (without resizing). Briefly:

Drop shadow color

Click on the button to open a color selector.

Drop shadow opacity

The opacity (0% - 100%) of the layer containing the shadow.

Drop shadow blur radius

The radius used by the <u>Gaussian blur</u> filter, which will be applied to the shadow.

Drop shadow X offset, Drop shadow Y offset

Direction and amount, by which the shadow will be moved from the selection.

Keep selection

If checked, the active selection will remain active when the filter has been applied.



6.12. Perspective





6.14. Bevel

3/29/25, 9:26 PM 6.14. Bevel

6.14. Bevel



6. Light and Shadow Filters



6.14. Bevel

6.14.1. Overview

Figure 17.146. Applying example for the Bevel filter



From top to bottom, without bevel, "Chamfer" bevel, and "Bump" bevel.

This filter adds a bevel to the layer. This filter works best when there are transparent areas around a colored shape.

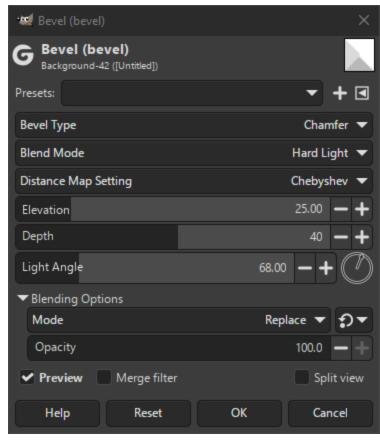
6.14.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Light and Shadow \rightarrow Bevel....

6.14.3. Options

Figure 17.147. "Bevel" filter options

3/29/25, 9:26 PM 6.14. Bevel



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

Bevel Type

You can choose between the following bevel types: Chamfer (the default) and Bump.

Chamfer simulates lighting of chamfered 3D-edges. Chamfered edges are sloped edges between two faces of an object.

Bump makes a 3D effect by adding an emboss effect on top of a blur.

Blend Mode

Several blend modes can be chosen here to adjust the effect. The first one, None, is for when you intend to set a blend mode for the layer in GIMP.

Distance Map Setting

Only available for Chamfer. There are three choices that each change the structure of the chamfer. Experiment to see what works best for your image.

Radius

Only available for Bump. This determines the size of the softening for the bump.

Elevation

This controls the elevation angle of the bevel.

Depth

This controls the emboss depth; i.e. how deep and detailed the bevel will be.

Light Angle

This controls the angle of the light source illuminating and shading the bevel.











3/29/25, 9:26 PM 6.15. Inner Glow

6.15. Inner Glow



6. Light and Shadow Filters



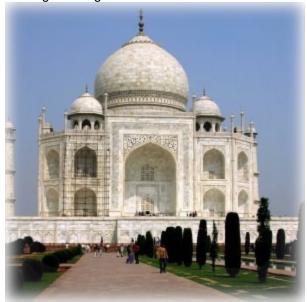
6.15. Inner Glow

6.15.1. Overview

Figure 17.148. Applying example for the Inner Glow filter



Original image



Inner Glow applied with a white color on a duplicated layer

This filter replaces the contents of the layer with an inner glow over the edges of the object. This filter needs a layer with alpha channel to work on. It works best if you first duplicate the layer and apply the inner glow on top.

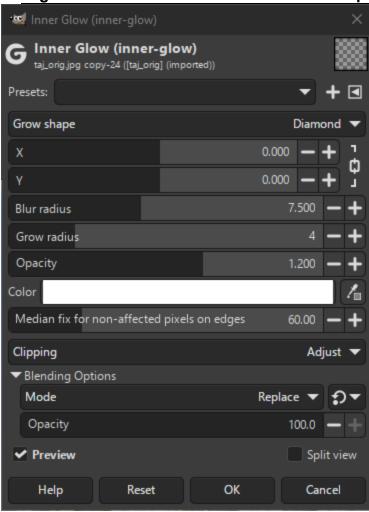
6.15.2. Activating the Filter

3/29/25, 9:26 PM 6.15. Inner Glow

This filter is found in the main menu under Filters → Light and Shadow → Inner Glow....

6.15.3. Options

Figure 17.149. "Inner Glow" filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

Grow Shape

The shape used to expand the shadow. Choices are Square, Circle (default), and Diamond.

X, Y

These set the coordinates where the glow starts from. By changing this, the glow can be made thicker on one side.

Blur Radius

This determines the size of the blur.

Grow Radius

The distance to expand the shadow before blurring, or when using negative values to contract the shadow.

Opacity

This determines how transparent or solid the inner glow will be.

Color

The color to use for the glow. By default picks the current foreground color, but it can be changed using either the color selection button or the color picker.

Median fix for non-affected pixels on edges

3/29/25, 9:26 PM 6.15. Inner Glow

Median blur covers unaffected pixels. Setting this slider too high will make it outline-like. Only slide it high enough to cover thin shaped corners.



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7. Noise Filters

6.14. Bevel

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3/29/25, 9:26 PM 7. Noise Filters

7. Noise Filters



Chapter 17. Filters



7. Noise Filters

7.1. Introduction

Noise filters add noise to the active layer or to the selection. To remove small defects from an image, see the <u>Despeckle</u> and <u>Selective Gaussian Blur</u> filters.

This category describes the following filters:

- Section 7.2, "CIE Ich Noise"
- Section 7.3, "HSV Noise"

- Section 7.4, "Hurl"
 Section 7.5, "Pick"
 Section 7.6, "RGB Noise"
- Section 7.7, "Slur"
- Section 7.8, "Spread"







6.15. Inner Glow



7.2. CIE Ich Noise

3/29/25, 9:26 PM 7.2. CIE lch Noise

7.2. CIE Ich Noise

7. Noise Filters



7.2. CIE Ich Noise

7.2.1. Overview

Figure 17.150. Example of applying the "CIE Ich Noise" filter







Filter "CIE Ich Noise" applied

The CIE lch Noise filter creates noise in the active layer or selection by using the Lightness, Chroma, Hue color model, according to the CIE ("Compagnie Internationale de l'Éclairage") specifications.

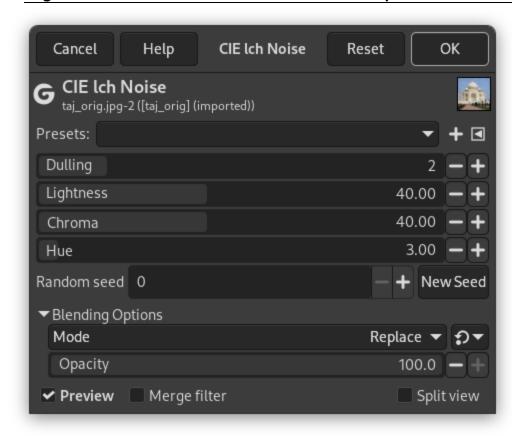
7.2.2. Activating the Filter

3/29/25, 9:26 PM 7.2. CIE Ich Noise

This filter is found in the main menu under Filters → Noise → CIE Ich Noise....

7.2.3. Options

Figure 17.151. "CIE Ich Noise" filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

Dulling

This slider (1 - 8) controls the randomness of the noise: a high value lowers the randomness.

Liahtness

This slider changes the lightness of the noise.

Chroma

This slider changes the chroma of the pixels in a random pattern (percentage of a white of the same lightness).

Hue

This slider changes the hue of the pixels in a random pattern. A higher value will increase the average change from the original pixel color.

Random seed, New Seed

This option controls the randomness of the filter. The Random seed box lets you manually enter a seed for the randomization algorithm used. You can also generate a random seed by pressing the New Seed button. If the same random seed is used in the same situation, the filter produces exactly the same results. A different random seed produces different results.







3/29/25, 9:26 PM 7.2. CIE lch Noise

7. Noise Filters



7.3. HSV Noise

3/29/25, 9:27 PM 7.3. HSV Noise

7.3. HSV Noise





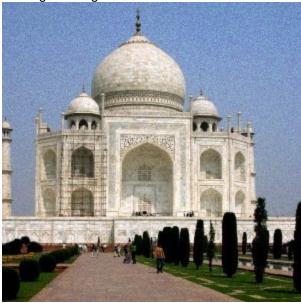
7.3. HSV Noise

7.3.1. Overview

Figure 17.152. Example of applying the "HSV Noise" filter



Original image



Filter "HSV Noise" applied

The HSV Noise filter creates noise in the active layer or selection by using the Hue, Saturation, Value (luminosity) color model.

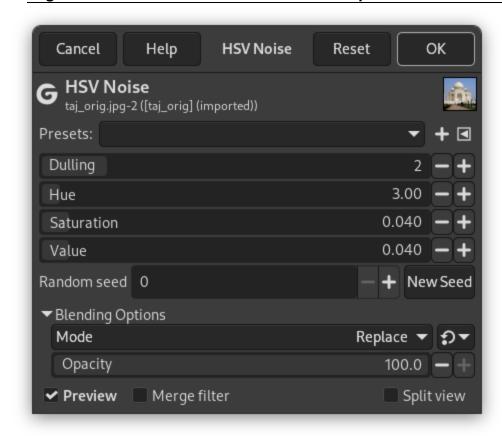
7.3.2. Activating the Filter

3/29/25, 9:27 PM 7.3. HSV Noise

This filter is found in the main menu under Filters → Noise → HSV Noise....

7.3.3. Options

Figure 17.153. "HSV Noise" filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

Dulling

This slider (1 - 8) controls how much the new pixel color value is allowed to be applied compared to the existing color. A low dulling will give an important hue variation. A high dulling will give a weak variation.

Hue

This slider changes the hue of the pixels in a random pattern. A higher value will increase the average change from the original pixel color.

Saturation

This slider increases saturation of scattered pixels.

Value

This slider increases brightness of scattered pixels.

Random seed, New Seed

This option controls the randomness of the filter. The Random seed box lets you manually enter a seed for the randomization algorithm used. You can also generate a random seed by pressing the New Seed button. If the same random seed is used in the same situation, the filter produces exactly the same results. A different random seed produces different results.







3/29/25, 9:27 PM 7.3. HSV Noise

7.2. CIE Ich Noise

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7.4. Hurl

3/29/25, 9:27 PM 7.4. Hurl

7.4. Hurl





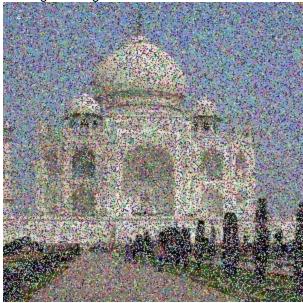
7.4. Hurl

7.4.1. Overview

Figure 17.154. Example for the "Hurl" filter



Original image



Filter "Hurl" applied

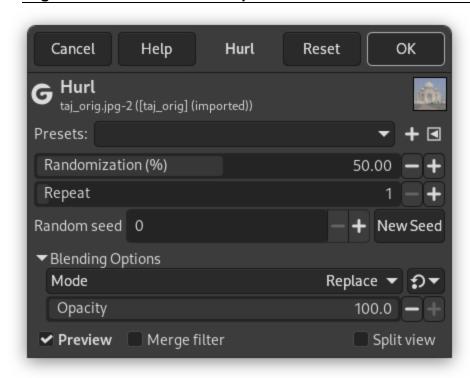
You can find this filter through Filters \rightarrow Noise \rightarrow Hurl....

The Hurl filter changes each affected pixel to a random color, so it produces real *random noise*. All color channels, including an alpha channel (if it is present) are randomized. All possible values are assigned with the same probability. The original values are not taken into account. All or only some pixels in an active layer or selection are affected, the percentage of affected pixels is determined by the Randomization (%) option.

3/29/25, 9:27 PM 7.4, Hurl

7.4.2. Options

Figure 17.155. "Hurl" options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

Randomization (%)

This slider represents the percentage of pixels of the active layer or selection which will be hurled. The higher value, the more pixels are hurled.

Repeat

It represents the number of times the filter will be applied. In the case of the Hurl filter it is not very useful, because the same results can be obtained faster just by using a higher Randomization (%) value.

Random seed, New Seed

This option controls the randomness of the filter. The Random seed box lets you manually enter a seed for the randomization algorithm used. You can also generate a random seed by pressing the New Seed button. If the same random seed is used in the same situation, the filter produces exactly the same results. A different random seed produces different results.



7.3. HSV Noise



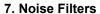




7.5. Pick

3/29/25, 9:27 PM 7.5. Pick

7.5. Pick





7.5. Pick

7.5.1. Overview

Figure 17.156. Example of applying the "Pick" filter



Original image



Filter "Pick" applied

The Pick filter replaces each affected pixel by a pixel value randomly chosen from its eight neighbors and itself (from a 3×3 square the pixel is center of). All or only some pixels in an active layer or selection are affected, the percentage of affected pixels is determined by the Randomization (%) option.

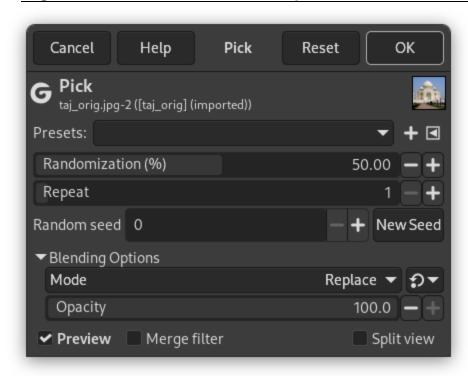
7.5.2. Activating the Filter

3/29/25, 9:27 PM 7.5. Pick

This filter is found in the main menu under Filters \rightarrow Noise \rightarrow Pick....

7.5.3. Options

Figure 17.157. "Pick" filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

Randomization (%)

This slider represents the percentage of pixels of the active layer or selection which will be picked. The higher value, the more pixels are picked.

Repeat

This slider represents the number of times the filter will be applied. Higher values result in more picking, pixel values being transferred farther away.

Random seed, New Seed

This option controls the randomness of the filter. The Random seed box lets you manually enter a seed for the randomization algorithm used. You can also generate a random seed by pressing the New Seed button. If the same random seed is used in the same situation, the filter produces exactly the same results. A different random seed produces different results.











7.6. RGB Noise

3/29/25, 9:27 PM 7.6. RGB Noise

7.6. RGB Noise





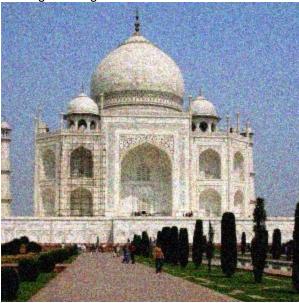
7.6. RGB Noise

7.6.1. Overview

Figure 17.158. Example of applying the "RGB Noise" filter



Original image



Filter "RGB Noise" applied

The RGB Noise filter adds a normally distributed noise to a layer or a selection. It uses the RGB color model to produce the noise (noise is added to red, green and blue values of each pixel). A normal distribution means, that only slight noise is added to the most pixels in the affected area, while less pixels are affected by more extreme values. (If you apply this filter to an image filled with a solid gray color and then look at its histogram, you will see a classic bell-shaped Gaussian curve.)

The result is very naturally looking noise.

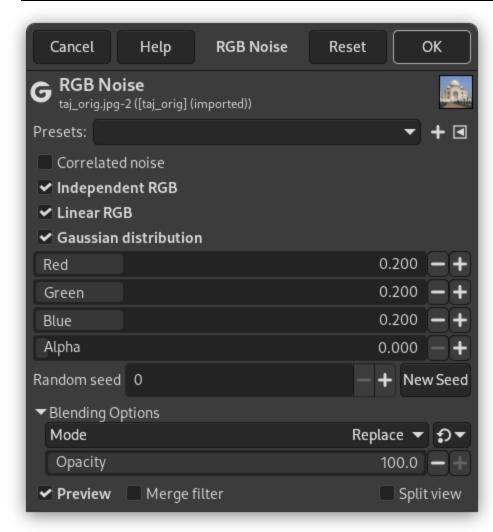
3/29/25, 9:27 PM 7.6. RGB Noise

7.6.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Noise \rightarrow RGB Noise....

7.6.3. Options

Figure 17.159. "RGB Noise" filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

Correlated noise

Noise may be additive (uncorrelated) or multiplicative (correlated - also known as speckle noise). When checked, every channel value is multiplied by a normal distributed value. So the noise depends on the channel values: a greater channel value leads to more noise, while dark colors (small values) tend to remain dark.

Independent RGB

When this radio button is checked, you can move each RGB slider separately. Otherwise, the sliders R, G and B will be replaced by a single slider Value. The same relative noise will then be added to all channels in each pixel, so the hue of pixels does not change much.

Linear RGB

Operate on linearized RGB color data.

Gaussian distribution

3/29/25, 9:27 PM 7.6. RGB Noise

Use a gaussian noise distribution. When unchecked, a linear noise distribution is used instead.

Red, Green, Blue, Alpha

These slidebars and adjacent input boxes allow to set noise level (0.00 - 1.00) in each channel.

The value set by these sliders actually determine the standard deviation of the normal distribution of applied noise.

The used standard deviation is a half of the set value (where 1 is the distance between the lowest and highest possible value in a channel).

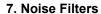
Random seed, New Seed

This option controls the randomness of the filter. The Random seed box lets you manually enter a seed for the randomization algorithm used. You can also generate a random seed by pressing the New Seed button. If the same random seed is used in the same situation, the filter produces exactly the same results. A different random seed produces different results.



3/29/25, 9:28 PM 7.7. Slur

7.7. Slur





7.7. Slur

7.7.1. Overview

Figure 17.160. Example of applying the Slur filter



Original image



Filter "Slur" applied

Slurring produces an effect resembling melting the image downwards; if a pixel is to be slurred, there is an 80% chance that it is replaced by the value of a pixel directly above it; otherwise, one of the two pixels to the left or right of the one above is used. All or only some pixels in an active layer or selection are affected, the percentage of affected pixels is determined by the Randomization (%) option.

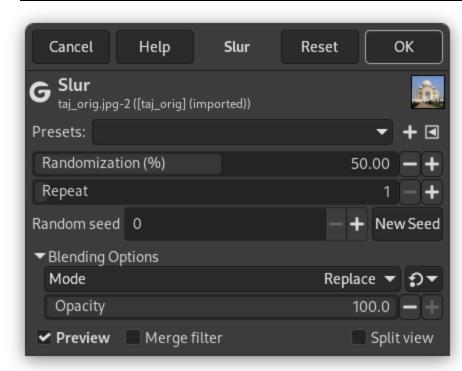
3/29/25, 9:28 PM 7.7, Slur

7.7.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Noise \rightarrow Slur....

7.7.3. Options

Figure 17.161. Slur filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

Randomization (%)

This slider represents the percentage of pixels of the active layer or selection which will be slurred. The higher value, the more pixels are slurred, but because of the way the filter works, its effect is most noticeable if this slider is set to a medium value, somewhere around 50. Experiment with it and try for yourself!

Repeat

This slider represents the number of times the filter will be applied. Higher values result in more slurring, moving the color over a longer distance.

Random seed, New Seed

This option controls the randomness of the filter. The Random seed box lets you manually enter a seed for the randomization algorithm used. You can also generate a random seed by pressing the New Seed button. If the same random seed is used in the same situation, the filter produces exactly the same results. A different random seed produces different results.



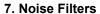
7.6. RGB Noise



7.8. Spread

3/29/25, 9:28 PM 7.8. Spread

7.8. Spread





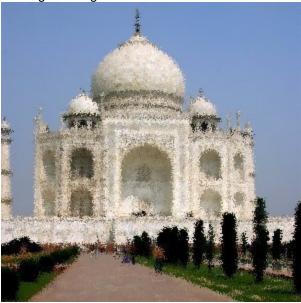
7.8. Spread

7.8.1. Overview

Figure 17.162. Example of applying the Spread filter



Original image



Filter "Spread" applied

The Spread filter swaps each pixel in the active layer or selection with another randomly chosen pixel by a user specified amount. It works on color transitions, not on plain color areas. No new color is introduced.

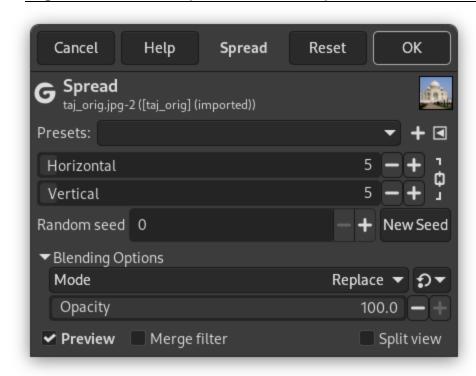
7.8.2. Activating the Filter

3/29/25, 9:28 PM 7.8. Spread

This filter is found in the main menu under Filters \rightarrow Noise \rightarrow Spread....

7.8.3. Options

Figure 17.163. "Spread" filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

Horizontal, Vertical

You can set the distance that pixels will be moved along Horizontal and Vertical axis. The axis can be locked by clicking the Chain icon.

Random seed, New Seed

This option controls the randomness of the filter. The Random seed box lets you manually enter a seed for the randomization algorithm used. You can also generate a random seed by pressing the New Seed button. If the same random seed is used in the same situation, the filter produces exactly the same results. A different random seed produces different results.



7.7. Slur



8. Edge-Detect Filters

8. Edge-Detect Filters



Chapter 17. Filters

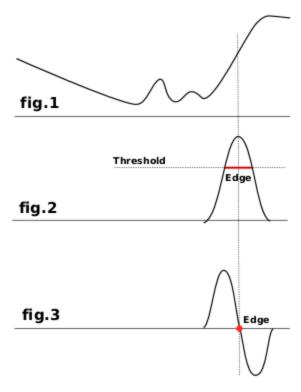


8. Edge-Detect Filters

8.1. Introduction

Edge detect filters search for borders between different colors and so can detect contours of objects. They are used to make selections and for many artistic purposes. This category describes the following filters:

- Section 8.2, "Difference of Gaussians"
- Section 8.3, "Edge"
- Section 8.4, "Laplace"
- Section 8.5, "Neon"
- Section 8.6, "Sobel"
- Section 8.7, "Image Gradient"



Most of them are based on gradient calculation methods and give thick border lines. Look at fig.1 which represents color intensity variations. On the left is a slow color gradient which is not a border. On the right is a quick variation which is an edge. Now, let us calculate the gradient, the variation speed, of this edge, i.e. the first derivative (fig.2). We have to decide that a border is detected when gradient is more than a threshold value (the exact border is at top of the curve, but this top varies according to borders). In most cases, threshold is under top and border is thick. The Laplacian edge detection uses the second derivative (fig.3). The top of the curve is now at zero and clearly identified. That's why Laplace filter renders a thin border, only a pixel wide. But this derivative gives several zeros corresponding to small ripples, resulting in false edges.

Some blurring before applying edge filters is often necessary: it flattens small ripples in signal and so prevents false edges.







7.8. Spread

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Report a bug in GIMP Report a documentation error

8.2. Difference of Gaussians

8.2. Difference of Gaussians





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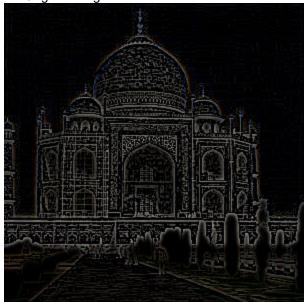
8.2. Difference of Gaussians

8.2.1. Overview

Figure 17.164. Applying example for the "Difference of Gaussians" filter







Filter "Difference of Gaussians" applied with radius 1 = 1.000 and radius 2 = 0.100.

This filter does edge detection using the so-called "Difference of Gaussians" algorithm, which works by performing two different Gaussian blurs on the image, with a different blurring radius for each, and subtracting them to yield the result. This algorithm is very widely used in artificial vision (maybe in biological vision as well!), and is pretty fast because there are very efficient methods for doing Gaussian blurs. The most important parameters are the blurring radii for the two Gaussian blurs. It is probably easiest to set them using the preview, but it may help to know that increasing the

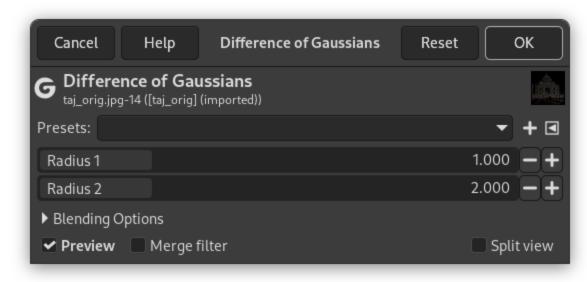
smaller radius tends to give thicker-appearing edges, and decreasing the larger radius tends to increase the "threshold" for recognizing something as an edge. In most cases you will get nicer results if Radius 2 is smaller than Radius 1, but nothing prevents you from reversing them, and in situations where you have a light figure on the dark background, reversing them may actually improve the result.

8.2.2. Activating the Filter

This filter is found in the main menu under Filters → Edge-Detect → Difference of Gaussians....

8.2.3. Options

Figure 17.165. Gaussian Difference filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Radius 1. Radius 2

Radius 1 and Radius 2 are the blurring radii for the two Gaussian blurs. If you want to produce something that looks like a sketch, in most cases setting "Radius 2" smaller than "Radius 1" will give better results.



3/29/25, 9:29 PM 8.3. Edge

8.3. Edge



8. Edge-Detect Filters



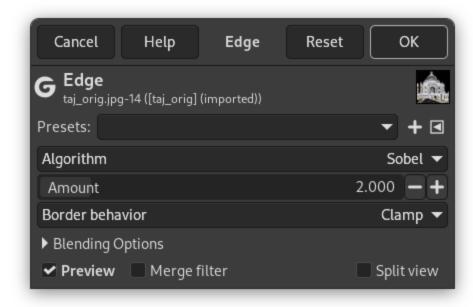
8.3. Edge

8.3.1. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Edge-Detect \rightarrow Edge....

8.3.2. Options

Figure 17.166. Edge filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

Algorithm

Edge detector offers several detection methods:

Sobel

Here, this method has no options and so is less interesting than the specific Sobel.

3/29/25, 9:29 PM 8.3. Edge



After applying the filter (Sobel option)

Prewitt compass
Result doesn't look different from Sobel.



After applying the filter (Prewitt compass option)

Gradient

Edges are thinner, less contrasted and more blurred than Sobel.

3/29/25, 9:29 PM 8.3. Edge



After applying the filter (Gradient option)

Roberts

No evident difference from Sobel.



After applying the filter (Roberts option)

Differential

Edges less bright.

3/29/25, 9:29 PM 8.3. Edge



After applying the filter (Differential option)

Laplace

Less interesting than the specific one.



After applying the filter (Laplace option)

Amount

A low value results in black, high-contrasted image with thin edges. A high value results in thick edges with low contrast and many colors in dark areas.

Border behavior

Where the edge detector will get adjoining pixels for its calculations when it is working on the image boundaries. This option will only have an effect on the boundaries of the result (if any). Clamp is the default and the best choice.



8.2. Difference of Gaussians







8.4. Laplace

3/29/25, 9:29 PM 8.4. Laplace

8.4. Laplace





8.4. Laplace

8.4.1. Overview

Figure 17.167. Applying example for the Laplace filter



Original image



Filter "Laplace" applied

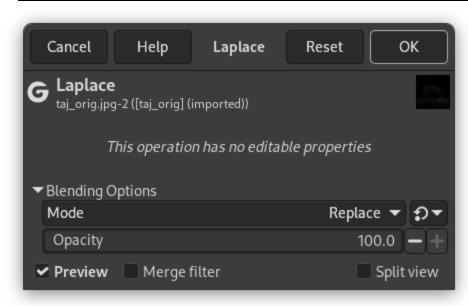
This filter detects edges in the image using Laplacian method, which produces thin, pixel wide borders.

8.4.2. Activating the Filter

3/29/25, 9:29 PM 8.4. Laplace

8.4.3. Options

Figure 17.168. Laplace filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view





3/29/25, 9:29 PM 8.5. Neon

8.5. **Neon**

8. Edge-Detect Filters



8.5. **Neon**

8.5.1. Overview

Figure 17.169. Applying example for the Neon filter



Original image



Filter "Neon" applied

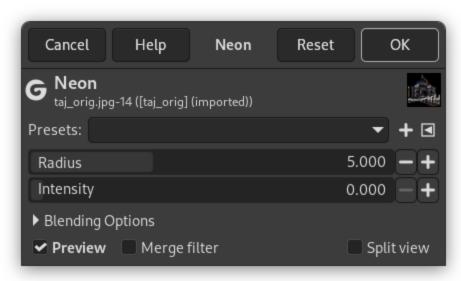
This filter detects edges in the active layer or selection and gives them a bright neon effect.

8.5.2. Activating the Filter

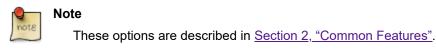
3/29/25, 9:29 PM 8.5. Neon

8.5.3. Options

Figure 17.170. Neon filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Radius

This option lets you determine how wide the detected edge will be.

Intensity

This option lets you determine how strong the filter effect will be.



3/29/25, 9:29 PM 8.6. Sobel

8.6. Sobel



8. Edge-Detect Filters



8.6. **Sobel**

8.6.1. Overview

Figure 17.171. Applying example of the Sobel filter



Original image



Filter "Sobel" applied

Sobel's filter detects horizontal and vertical edges separately on a scaled image. Color images are turned into RGB scaled images. As with the Laplace filter, the result is a transparent image with black lines and some rest of colors.

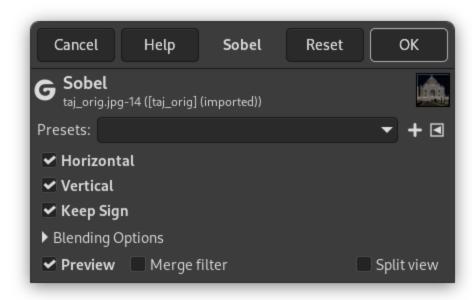
8.6.2. Activating the Filter

3/29/25, 9:29 PM 8.6. Sobel

This filter is found in the main menu under Filters \rightarrow Edge-Detect \rightarrow Sobel....

8.6.3. Options

Figure 17.172. Sobel filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

Horizontal

Renders near horizontal edges.

Vertical

Renders near vertical edges.

Keep sign

This option allows you to set how the filter will work if you have selected one direction for use only: a flat relief with bumps and hollows will be created.



8.7. Image Gradient

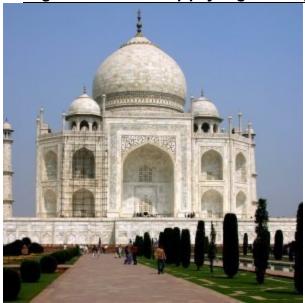




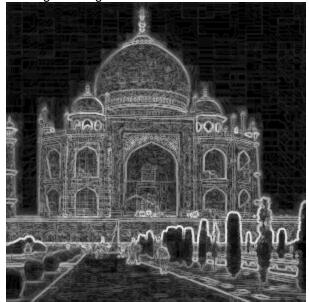
8.7. Image Gradient

8.7.1. Overview

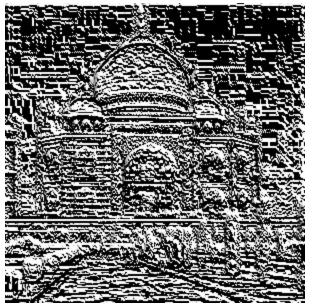
Figure 17.173. Applying example for the Image Gradient filter



Original image



Filter "Image Gradient" applied with default options.



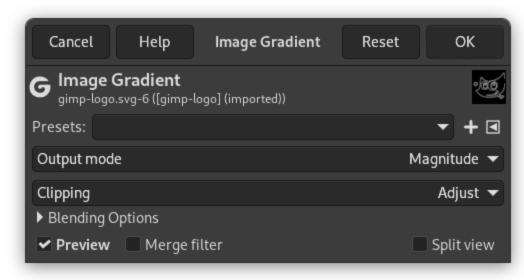
Filter "Image Gradient" applied with Direction option. This filter detects edges in one or two gradient directions.

8.7.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Edge-Detect \rightarrow Image Gradient....

8.7.3. Options

Figure 17.174. Image Gradient filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



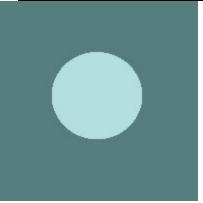
Note

These options are described in Section 2, "Common Features".

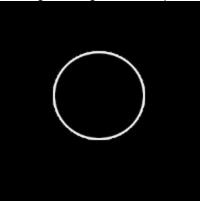
Output mode

Magnitude is default: it combines both directions. Direction: only one direction is used. Both is like Magnitude.

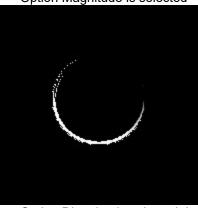
Figure 17.175. Output mode examples



Original image, with abrupt luminosity change



Option Magnitude is selected



Option Direction is selected. In result, black is no edge detected, white is edge detected.



8.6. Sobel







9. Generic Filters

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9. Generic Filters



Chapter 17. Filters



9. Generic Filters

9.1. Introduction

Generic filters are a catch-all for filters which can't be placed elsewhere. This category describes the following filters:

- Section 9.2, "Convolution Matrix"
- Section 9.3, "Distance Map"
- Section 9.4, "Normal Map"
- Section 9.5, "Dilate"
- Section 9.6, "Erode" Section 9.7, "GEGL Graph"
- Section 9.8, "Text Styling"







8.7. Image Gradient



9.2. Convolution Matrix

9.2. Convolution Matrix



9. Generic Filters



9.2. Convolution Matrix

9.2.1. Overview

Here is a mathematician's domain. Most of filters are using convolution matrix. With the Convolution Matrix filter, if the fancy takes you, you can build a custom filter.

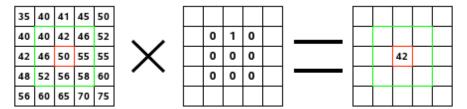
What is a convolution matrix? It's possible to get a rough idea of it without using mathematical tools that only a few ones know. Convolution is the treatment of a matrix by another one which is called "kernel".

The Convolution Matrix filter uses a first matrix which is the Image to be treated. The image is a bi-dimensional collection of pixels in rectangular coordinates. The used kernel depends on the effect you want.

GIMP uses 5×5 or 3×3 matrices. We will consider only 3×3 matrices, they are the most used and they are enough for all effects you want. If all border values of a kernel are set to zero, then system will consider it as a 3×3 matrix.

The filter studies successively every pixel of the image. For each of them, which we will call the "initial pixel", it multiplies the value of this pixel and values of the 8 surrounding pixels by the kernel corresponding value. Then it adds the results, and the initial pixel is set to this final result value.

A simple example:



On the left is the image matrix: each pixel is marked with its value. The initial pixel has a red border. The kernel action area has a green border. In the middle is the kernel and, on the right is the convolution result.

Here is what happened: the filter read successively, from left to right and from top to bottom, all the pixels of the kernel action area. It multiplied the value of each of them by the kernel corresponding value and added results. The initial pixel has become 42: (40*0)+(42*1)+(46*0)+(46*0)+(50*0)+(55*0)+(52*0)+(56*0)+(58*0) = 42. (the filter doesn't work on the image but on a copy). As a graphical result, the initial pixel moved a pixel downwards.

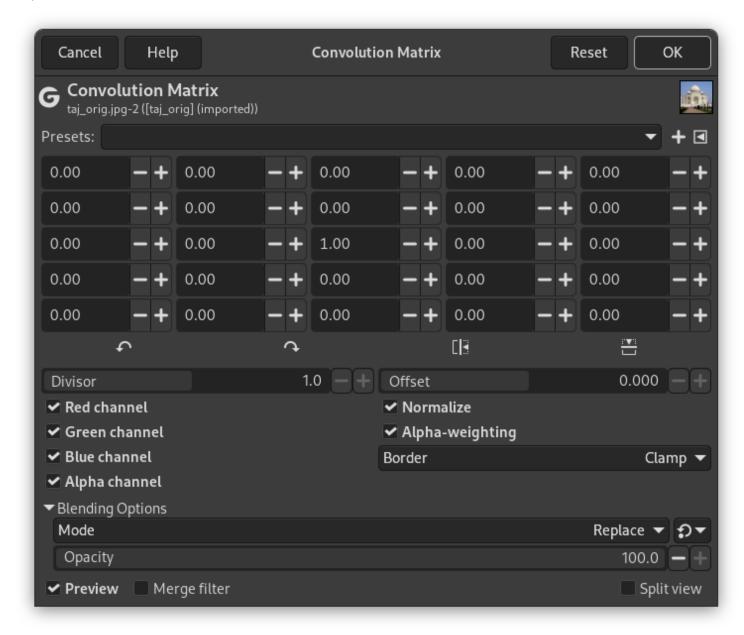
9.2.2. Activating the Filter

This filter is found in the main menu under Filters → Generic → Convolution Matrix....

9.2.3. Options

Figure 17.176. "Convolution matrix" options

3/29/25, 9:30 PM 9.2. Convolution Matrix



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Matrix

This is the 5×5 kernel matrix: you enter wanted values directly into boxes.

Divisor

The result of previous calculation will be divided by this divisor. You will hardly use anything else than 1, which leaves results unchanged, and 9 or 25 according to matrix size, which gives the average of pixel values. The divisor can only be changed when Normalize is unchecked.

Offset

This value is added to the division result. This is useful if result may be negative. This offset may be negative. It can only be changed when Normalize is unchecked.

Channels

Here you can select which channels the filter should change.

Normalize

If this option is checked, The Divisor takes the result value of convolution. If this result is equal to zero (it's not possible to divide by zero), then a 128 offset is applied. If it is negative (a negative color is not possible), a 255 offset

is applied (inverts result).

Alpha-weighting

If this option is not checked, the filter doesn't take in account transparency and this may be cause of some artefacts when blurring.

Border

When the initial pixel is on a border, a part of the kernel is outside the image. You have to decide what the filter should do:

Figure 17.177. Border examples



Source image



None border



Clamp border



Loop border

None

This part of the kernel is not taken into account.

Clamp

Pixels on borders are not modified, but they are cropped.

Loop

This part of the kernel will be affected by pixels of the opposite border, so pixels disappearing from one side reappear on the other side.

Black

Pixels on borders are changed to black.

White

Pixels on borders are changed to white.

9.2.4. Examples

Design of kernels is based on high levels mathematics. You can find ready-made kernels on the Web. Here are a few examples:

Figure 17.178. Sharpen

0	0	0	0	0
0	0	-1	0	0
0	-1	5	-1	0
0	0	-1	0	0
0	Λ	0	^	0

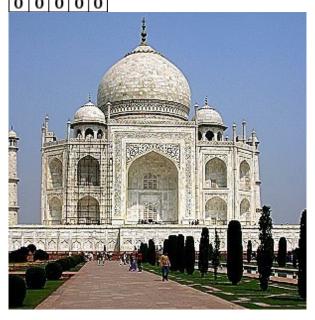


Figure 17.179. Blur

0	0	0	0	0
0	1	1	1	0
0	1	1	1	0
0	1	1	1	0
0	0	0	0	0



Figure 17.180. Edge enhance

60 - 1 60 - 1	0	0	0	3)
	-1	1	0	250
	0	0	0	
3-3	-	30-3		3

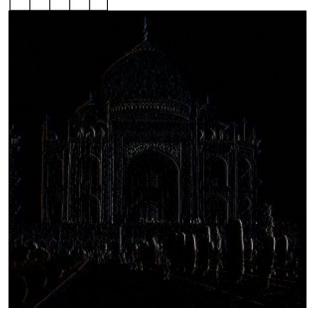


Figure 17.181. Edge detect

		20-3		0
5 - 3 5 - 3	0	1	0	
	1	-4	1	
	0	1	0	
3)—3		20—33		2-



Figure 17.182. Emboss

5 - S	-2	-1	0	3 3
	-1	1	1	
	0	1	2	
3-		20-2		3





9. Generic Filters







9.3. Distance Map

9.3. Distance Map





9.3. Distance Map

9.3.1. Overview

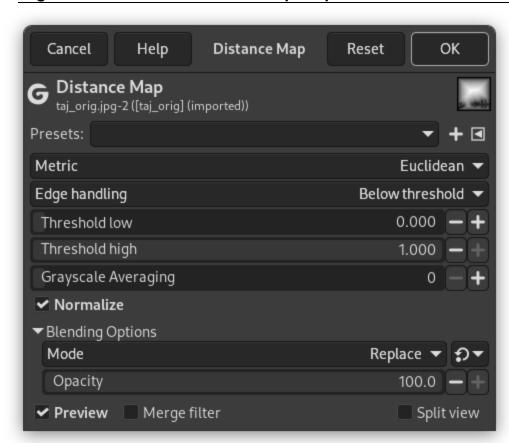
Each pixel in the image is replaced with a gray value dependent on the distance to the nearest obstacle pixel, generally a boundary pixel. Different methods can be used to calculate the distance.

9.3.2. Activating the Filter

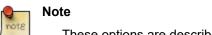
This filter is found in the main menu under Filters \rightarrow Generic \rightarrow Distance Map....

9.3.3. Options

Figure 17.183. "Distance Map" options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



These options are described in Section 2, "Common Features".

Metric

"Metric" is a topology term. Three methods are available:

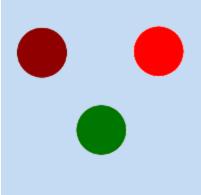
- Euclidean default: the distance is a straight line.
- Manhattan: the distance is the sum of the one-dimensional distances along the X and Y axes.
- Chebyshev: the distance is the maximum of the one-dimensional distances along the X and Y axes.

Edge handling

This defines how areas outside the input are considered when calculating distance. Choices are: Below threshold and Above threshold.

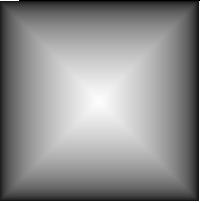
Threshold low

Default is 0. Increasing this value selects higher lightness pixels

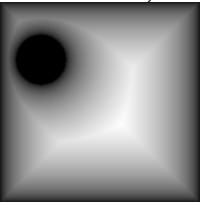


Original image for examples. Threshold low will be progressively increased. Lightness: dark red = 0.070; bright red = 0.223; green = 0.133

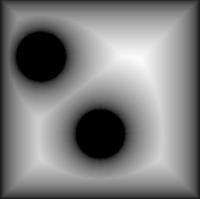
Figure 17.184. "Threshold low" example



Threshold low = 0: only border distances are visible.



Threshold low = 0.070: "dark red" circle appears.



Threshold low = 0.133: "green" circle appears.



Threshold low = 0.223: "bright red" circle appears.

Threshold high

Default is 1. Decreasing this value makes result darker.

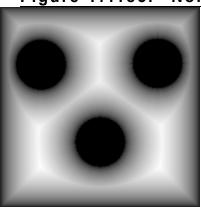
Grayscale Averaging

Number of computations for grayscale averaging.

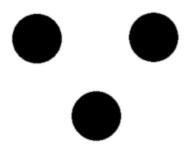
Normalize

This option is checked by default. If you uncheck it, no blur is created.

Figure 17.185. "Normalize" example



Normalize option checked.



Normalize option unchecked.







9.2. Convolution Matrix



9.4. Normal Map

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9.4. Normal Map



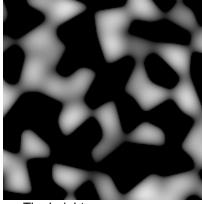


9.4. Normal Map

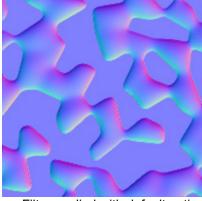
9.4.1. Overview

This filter generates a *normal map* from a *height map*. It's early initial work and a lot more is expected to be done. We will use a height map created with <u>Section 14.8, "Simplex Noise"</u>:

Figure 17.186. Normal Map Example



The height map



Filter applied with default options, giving the Normal Map

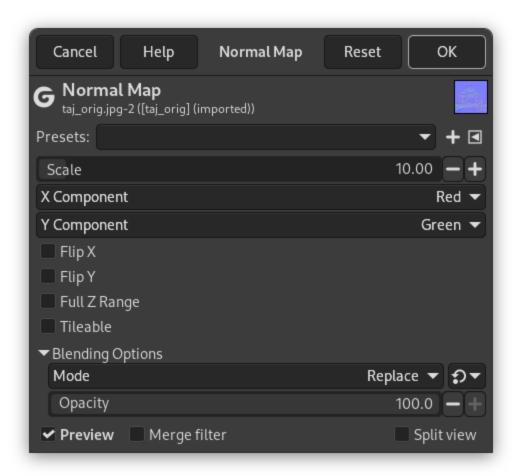
9.4.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Generic \rightarrow Normal Map....

9.4.3. Options

Figure 17.187. "Normal Map" options

3/29/25, 9:30 PM 9.4. Normal Map



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view

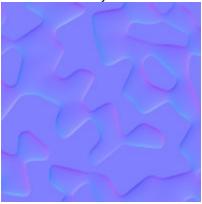


Note

These options are described in Section 2, "Common Features".

Scale

The amount by which to scale the heights values: increase or decrease bumps.



Scale = 2

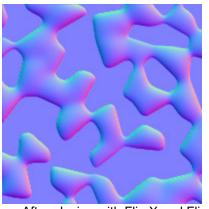
X Component, Y Component

The component used for X, Y coordinates: you can choose between the three RGB colors for the bumps. Note that if you change these values, new colors are added to the existing colors, giving the complementary colors.

Flip X, Flip Y

Flip the X, Y coordinates: flip bumps colors, horizontally and vertically. Bumps have a clear border and an opposite dark border, giving a feeling that light comes from a certain direction. To see bumps instead of hollows, light must come from the upper left corner; play with Flip X and Flip Y to get this lighting.

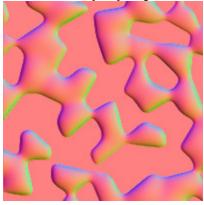
3/29/25, 9:30 PM 9.4. Normal Map



After playing with Flip X and Flip Y

Full Z Range

Use the full [0, 1] range to encode the Z coordinates: You can get a more abrupt color gradient.



Tileable

Generate a tileable map:







9.3. Distance Map



9.5. Dilate

3/29/25, 9:31 PM 9.5. Dilate

9.5. Dilate

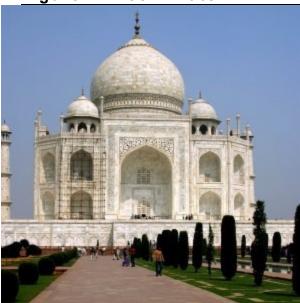




9.5. Dilate

9.5.1. Overview

Figure 17.188. Dilate



Original image



Filter "Dilate" applied

This filter widens and enhances bright areas of the active layer or selection.

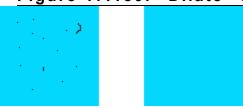
For every image pixel, it brings the pixel Value (luminosity) into line with the upper value (the brightest) of the 8 neighboring pixels (3×3 matrix). So, a bright pixel is added around bright areas. An isolated pixel on a brighter background will be deleted. A larger bright area will dilate by one pixel in all directions.

On complex images, bright areas are widened and enhanced the same, and somewhat pixelated.

On a solid background, this filter can delete noise:

3/29/25, 9:31 PM 9.5. Dilate

Figure 17.189. "Dilate" example



9.5.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Generic \rightarrow Dilate.

9.5.3. Examples

Figure 17.190. Dilate neon effect















9.6. Erode

3/29/25, 9:31 PM 9.6. Erode

9.6. Erode





9.6. Erode

9.6.1. Overview

Figure 17.191. Applying example for the Erode filter



Original image

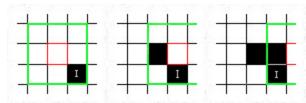


Filter "Erode" applied

This filter widens and enhances dark areas of the active layer or selection.

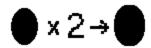
For every image pixel, it brings the pixel Value (luminosity) into line with the lowest Value (the darkest) of the 8 neighboring pixels (3×3 matrix). So, a dark pixel is added around dark areas. An isolated pixel on a brighter background will be changed to a big "pixel", composed of 9 pixels, and that will create some noise in the image.

3/29/25, 9:31 PM 9.6. Erode



In this image, the studied pixel has a red border and the studied 3×3 matrix has a green border. Thus when the pixel marked with "I" is inside the green border, the studied pixel turns to black.

A larger dark area will expand by one pixel in all directions:



The filter was applied 3 times.

On more complex images, dark areas are widened and enhanced the same, and somewhat pixelated. Here, the filter was applied 3 times:



Of course, if background is darker than foreground, it will cover the whole image.

9.6.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Generic \rightarrow Erode.

9.6.3. Examples

Figure 17.192. Erode text

E E



9.5. Dilate







9.7. GEGL Graph

3/29/25, 9:31 PM 9.7. GEGL Graph

9.7. GEGL Graph





9.7. GEGL Graph

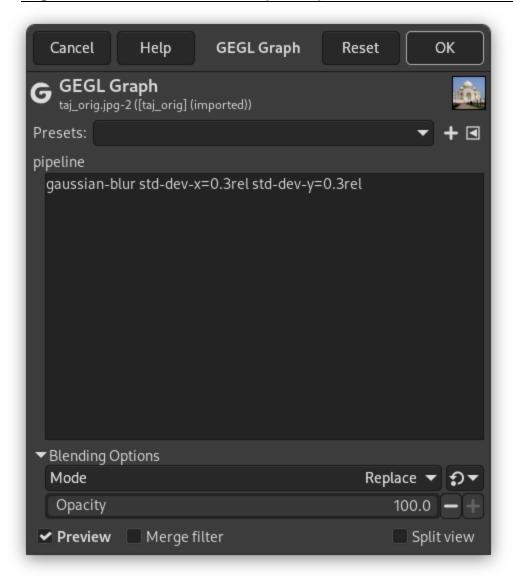
9.7.1. Overview

9.7.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Generic \rightarrow GEGL Graph....

9.7.3. Options

Figure 17.193. "GEGL Graph" options



3/29/25, 9:31 PM 9.7. GEGL Graph

Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

pipeline

Here you can add one or more **GEGL** operations that will be performed on the active layer.



9.8. Text Styling

9. Generic Filters



9.8. Text Styling

9.8.1. Overview

Figure 17.194. Applying example for the Text Styling filter



Text Styling examples. Topmost unstyled text; second: color, outline and shadow applied; third: bevel and inner glow applied; bottom: image and outline image overlay applied.

This filter allows you to combine and apply several styles to a layer, such as an outline, shadow, bevel, inner glow and image overlay. Although this can be especially useful for text, it works on other layers too. Some of the settings require an alpha channel and transparent areas for best results.

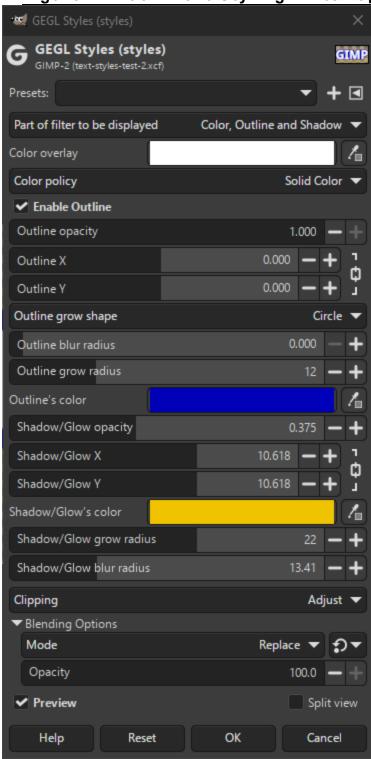
The settings consist of three parts. Which part is visible can be selected by changing Part of filter to be displayed.

9.8.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Generic \rightarrow Text Styling....

9.8.3. Options

Figure 17.195. "Text Styling" filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

Part of filter to be displayed

The settings consist of three parts. Which part is visible can be changed by selecting a choice from the drop-down list here. The choices are <u>Color, Outline, Shadow</u>, <u>Bevel and Inner Glow</u>, and <u>>Image upload and Outline Bevel</u>.

Color, Outline, Shadow

The below settings control color, outline and shadow styles.

Color Overlay

This sets the color of the non-transparent areas of the layer or selection. Changing the color can be done by clicking the color button, or the color picker.

Color policy

This decides how the color is applied to the layer or selection. The choices are:

- No Color: do not use the color selected here.
- Multiply: multiply the color of the selection or layer with that of the styles color.
- Solid Color: replace the colors of the layer or selection with the styles color.

Enable Outline

When this is enabled, an outline will be created around the edges of the objects in the selection or layer. The following settings control the parameters used to create the outline.

Outline Opacity

The opacity of the outline controls how transparent the outline will be.

Outline X. Outline Y

These control the location where the outline starts.

By default these slide together. You can click the lock to the right of the sliders to make them move separately (and vice versa).

Outline Grow Shape

The shape used to grow the outline. Choices are Square, Circle (default), and Diamond.

Outline blur radius

This determines the amount of blur to use on the outline.

Outline grow radius

This determines the size of the outline.

Outline's Color

This sets the color of outline. Changing the color can be done by clicking the color button, or the color picker.

Shadow/Glow opacity

This controls the visibility and transparency of the shadow glow around the outline. When set to 0.0 there is no shadow glow.

Shadow/Glow X, Shadow/Glow Y

These control the location where the shadow glow starts.

By default these slide together. You can click the lock to the right of the sliders to make them move separately (and vice versa).

Shadow/Glow's Color

This sets the color of the shadow glow. Changing the color can be done by clicking the color button, or the color picker.

Shadow/Glow grow radius

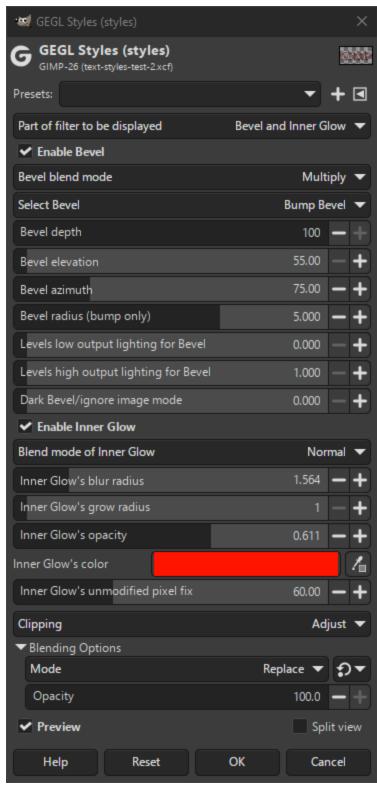
The distance to expand the shadow glow before blurring.

Shadow/Glow blur radius

This determines the amount of blur to use for the shadow glow.

Bevel and Inner Glow

Figure 17.196. "Bevel and Inner Glow" filter options



The below settings control bevel and inner glow styles.

Enable Bevel

When enabled a bevel is added. The settings below define how exactly the bevel is made.

Bevel blend mode

This selects the blend mode that will be used to blend the bevel with the layer or selection. This affects how the two will be combined and thus the visual effect.

Choices are Multiply, Add, Hard Light, Darken, and Color Dodge.

Select Bevel

You can choose between the following bevel types: Bump Bevel (the default) and Chamfer Bevel. Bump Bevel makes a 3D effect by adding an emboss effect on top of a blur.

Chamfer Bevel simulates lighting of chamfered 3D-edges. Chamfered edges are sloped edges between two faces of an object.

Emboss Depth

This controls the emboss depth; i.e. how deep and detailed the bevel will be.

Emboss elevation

This controls the elevation angle of the bevel.

Emboss azimuth

This controls the angle of the light source illuminating and shading the bevel.

Bevel radius (bump only)

Only available for Bump Bevel. This determines the size of the softening for the bump.

Levels low output lighting for Bevel, Levels high output lighting for Bevel

These allow adjustment of the low and high levels of the bevel, which control the dark and light areas.

Dark Bevel/ignore image mode

This instructs the outline bevel to ignore image details if there is an image file overlay below it. It also allows outline bevel to work better when the user selects darker colors.

This effect is mainly intended for Bump Bevel and will be hardly noticeable when Chamfer Bevel is selected.

Enable Inner Glow

When enabled an inner glow is added. The settings below define how exactly the inner glow is made.

Blend mode of Inner Glow

This selects the blend mode that will be used to blend the inner glow with the layer or selection. This affects how the two will be combined and thus the visual effect.

Choices are Normal, Overlay, Screen, Hard Light, Color Dodge, and Plus.

Inner Glow's blur radius

This determines the size of the blur.

Inner Glow's grow radius

The distance to expand the inner glow before blurring.

Inner Glow's opacity

This determines how transparent or solid the inner glow will be.

Inner Glow's color

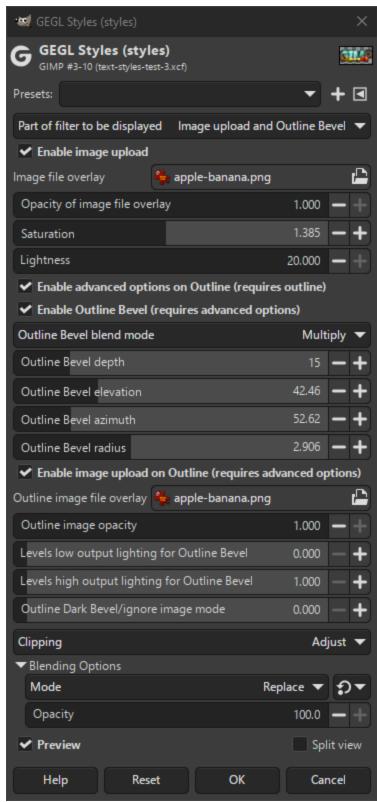
The color to use for the glow. By default picks the current foreground color, but it can be changed using either the color selection button or the color picker.

Inner Glow's unmodified pixel fix

Median blur covers unaffected pixels. Setting this slider too high will make it outline-like. Only slide it high enough to cover thin shaped corners.

Image upload and Outline Bevel

Figure 17.197. "Image upload and Outline Bevel" filter options



The below settings control image overlay and outline bevel styles.

Enable image upload

When enabled an external image will be used as overlay and adjust related settings below it.

Image file overlay

This allows you to browse for and select an image on your computer to be used as image overlay. This will be shown on top of the opaque parts of the layer or selection.

Opacity of image file overlay

This setting allows you to adjust the opacity of the image overlay. By lowering the opacity you will be able to see a combination of the overlay and what's under it.

Saturation

This allows you adjust the saturation of the image overlay, or anything below it when no image was chosen.

Liahtness

This allows you adjust the lightness of the image overlay, or anything below it when no image was chosen.

Enable advanced options on Outline (requires outline)

When enabled, and Enable Outline is enabled, the below settings can be used to set additional outline options.

Enable Outline Bevel (requires advanced options)

When enabled and the advanced options setting is also enabled, it allows you to outline the bevel.

Outline Bevel blend mode

This selects the blend mode that will be used to blend the bevel with the outline. This affects how the two will be combined and thus the visual effect.

Choices are Multiply, Add, Hard Light, Darken, and Color Dodge.

Outline Bevel Depth

This controls the emboss depth; i.e. how deep and detailed the bevel will be.

Outline Bevel elevation

This controls the elevation angle of the bevel.

Outline Bevel azimuth

This controls the angle of the light source illuminating and shading the bevel.

Outline Bevel radius

This determines the size of the softening for the bump.

Enable image upload on Outline (requires advanced options)

When enabled and the advanced options setting is also enabled, it allows you to outline the bevel.

Outline image file overlay

This allows you to browse for and select an image on your computer to be used as image overlay for the outline. This will be shown on top of the opaque parts of the outline.

Outline image opacity

This setting allows you to adjust the opacity of the image overlay for the outline. By lowering the opacity you will be able to see a combination of the overlay and what's under it.

Levels low output lighting for Outline Bevel, Levels high output lighting for Outline Bevel

These allow adjustment of the low and high levels of the outline bevel, which control the dark and light areas.

Outline Dark Bevel/ignore image mode

This instructs the outline bevel to ignore image details if there is an image file overlay below it. It also allows outline bevel to work better when the user selects darker colors.











10. Combine Filters

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10. Combine Filters



Chapter 17. Filters



10. Combine Filters

10.1. Introduction

Combine filters associate two or more images into a single image. This category describes the following filters:

- Section 10.2, "Depth Merge"
- Section 10.3, "Filmstrip"







9.8. Text Styling



10.2. Depth Merge

10.2. Depth Merge







10.2. Depth Merge

Depth Merge is a Combine Filter which is useful to combine two different pictures or layers. You can decide which part of every image or layer will stay visible.

10.2.1. Overview

Figure 17.198. Filter example



Original



Filter applied

Every image is associated with a map which works as a mask. Simply create this map as a grayscale gradient: when applied onto the image, dark areas of the mask will show the underlying image and bright areas will mask the image.

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Note

To work with this filter, images and maps must have the same size. All images to be selected must be present on screen.

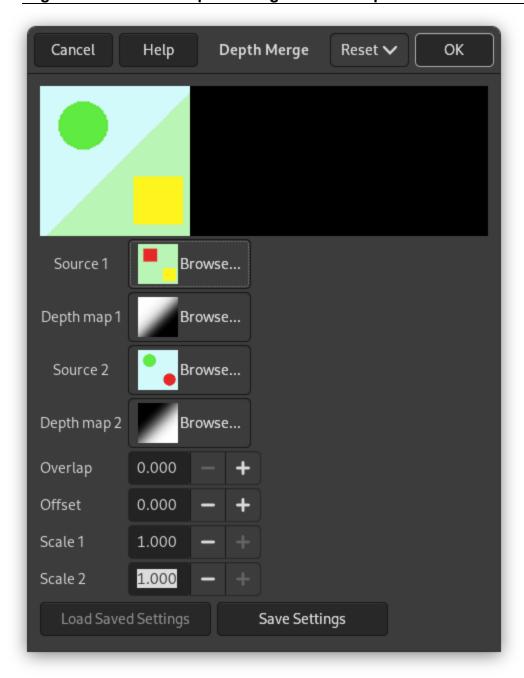
You can also use this filter on an image with several layers. All layers will appear in the drop-down lists used to select images. These layers must have the same size.

10.2.2. Accessing this Filter

You can find this filter through Filters \rightarrow Combine \rightarrow Depth Merge...

10.2.3. Options

Figure 17.199. "Depth Merge" filter options



Source 1, Source 2

Defines the source images to use for the blending.

Depth map 1, Depth map 2

Define the pictures to use as transformation maps for the sources.

Overlap

Creates soft transitions between images.

Offset

This option shifts the merging limit, giving more or less importance to an image against the other.

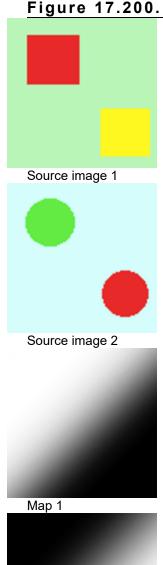
Scale 1, Scale 2

Same as above for Offset, but more sensitive and applied to each map separately. When you scale to a lower value, it will affect the map image's value, making it darker. So, black is more dominant in the merge and you will see more of the image.

10.2.4. Using example

Maps are grayscale gradients created with the Gradient tool and modified with the Curve tool.

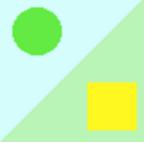
Figure 17.200. Source images and their maps



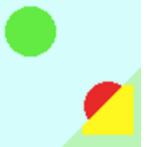
Map 2

You can understand what's going on. Image-1 is treated by map-1: the red square is masked and the yellow square remains visible. Image-2 is treated by map-2: the red circle is masked and the green circle remains visible. In total, the green circle and the yellow square stay visible.

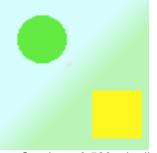
Figure 17.201. Results



No offset and no overlap. The limit between both images is sharp and is situated in the middle of the mask gradient.



Offset = 0.980 : the limit, sharp, is shifted so that the image-2 area is increased.



Overlap = 0.520 : the limit is blurred.



Scale 1 reduced to 0.056: as with Offset, the limit is shifted. Image-1 area is increased.











10.3. Filmstrip

10.3. Filmstrip

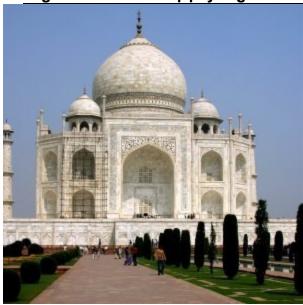
10. Combine Filters



10.3. Filmstrip

10.3.1. Overview

Figure 17.202. Applying example for the Filmstrip filter



Original image



Filter "Filmstrip" applied

Filmstrip filter lets you merge several pictures into a photographic film drawing.



Note

This filter does not invert colors, so it does not imitate negative film like the ones used to produce prints. Instead you should think of the result as an imitation of slide film or cinema film.

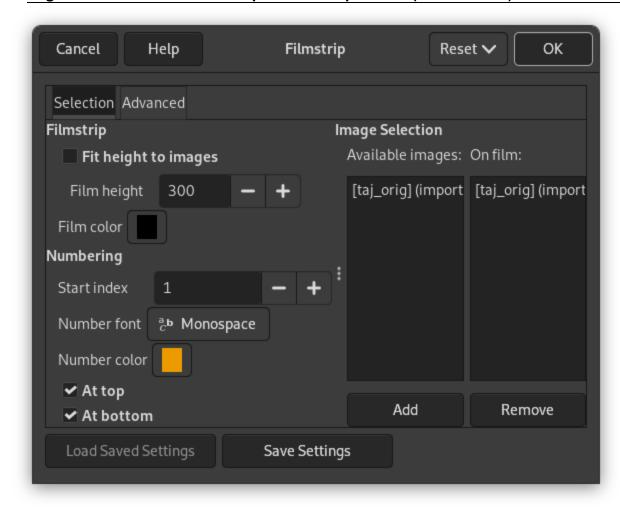
10.3.2. Accessing this Filter

You can find this filter through Filters → Combine → Filmstrip....

10.3.3. Options

10.3.3.1. Selection

Figure 17.203. "Filmstrip" filter options (Selection)



Filmstrip

Fit height to images

Applies the height of original pictures to the resulting one.

Film height

This option lets you define the height of the resulting picture. If originals have different sizes, they will be scaled to this size.

Film color

By clicking on the color button you can define the color of the film (around and between pictures).

Numbering

Start index

Defines the beginning number which will be used for the images.

Number font

Defines the font of digits.

Number color

By clicking on the color button, you can define the font color of digits.

At top, At bottom

Defines the position of the number.

Image Selection

Available images

Shows the pictures which can be used for merging. The pictures are the ones already opened in GIMP.

On film

Shows the pictures chosen to be merged.

Add

This button allows the user to put an available image in the "On film" section.

Remove

This button allows to bring a picture from "On film" to "Available images". After that, the picture will not be used anymore in the resulting document.

10.3.3.2. Advanced

Figure 17.204. "Filmstrip" filter options (Advanced)

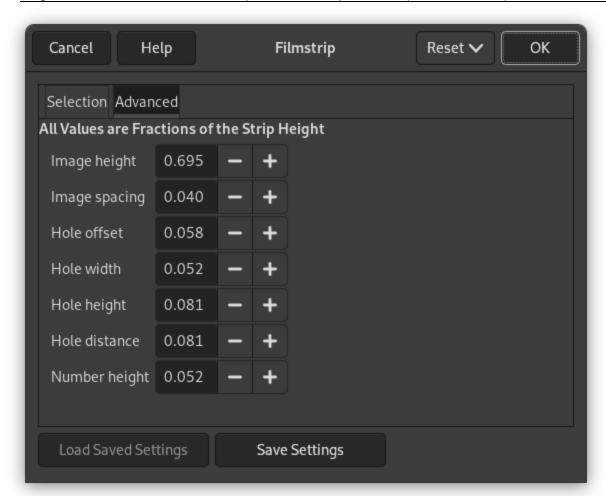


Image height

Defines the height of each picture in the resulting image.

Image spacing

Defines the space between the pictures as they will be inserted in the future image.

Hole offset

Defines the hole position from image border.

Hole width

Defines the width of the holes in the resulting image.

Hole height

Defines the height of the holes in the resulting image.

Hole spacing

Defines the space between holes

Number height

Defines the height of the index number, proportionally to the height of the picture.

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10.2. Depth Merge



11. Artistic Filters

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11. Artistic Filters



Chapter 17. Filters



11. Artistic Filters

11.1. Introduction

Artistic filters create artistic effects like cubism, oil painting, canvas... This category describes the following filters:

- Section 11.2, "Apply Canvas"
- Section 11.3, "Cartoon"
- Section 11.4, "Cubism"

- Section 11.5, "Glass Tile"
 Section 11.6, "Oilify"
 Section 11.7, "Photocopy"
 Section 11.8, "Simple Linear Iterative Clustering (SLIC)"
- Section 11.9, "Softglow"
- Section 11.10, "Waterpixels"
- Section 11.11, "Clothify"
- Section 11.12, "GIMPressionist"
- Section 11.13, "Van Gogh (LIC)" Section 11.14, "Weave"







10.3. Filmstrip



11.2. Apply Canvas

11.2. Apply Canvas

11. Artistic Filters



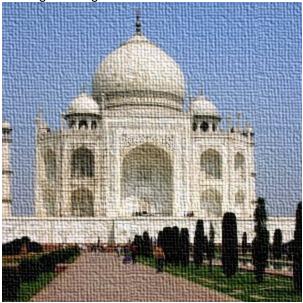
11.2. Apply Canvas

11.2.1. Overview

Figure 17.205. Example for the "Apply Canvas" filter



Original image



Filter "Apply Canvas" applied

This filter applies a canvas-like effect to the current layer or selection. It textures the image as if it were an artist's canvas.

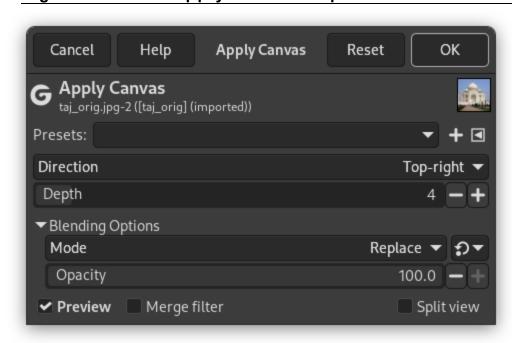
11.2.2. Activating the Filter

This filter is found in the main menu under Filters → Artistic → Apply Canvas....

11.2.3. Options

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Figure 17.206. "Apply Canvas" options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

Direction

Direction sets the starting direction of the canvas render. You can also consider that this option gives you the position of the light source which lightens the canvas.

Depth

The Depth slider controls the apparent depth of the rendered canvas effect from 1 (very flat) to 50 (very deep).



3/29/25, 9:33 PM 11.3. Cartoon

11.3. Cartoon

11. Artistic Filters



11.3. Cartoon

11.3.1. Overview

Figure 17.207. Example for the "Cartoon" filter



Original image



Filter "Cartoon" applied

The Cartoon filter modifies the active layer or selection so that it looks like a cartoon drawing. Its result is similar to a black felt pen drawing subsequently shaded with color. This is achieved by darkening areas that are already distinctly darker than their neighborhood.

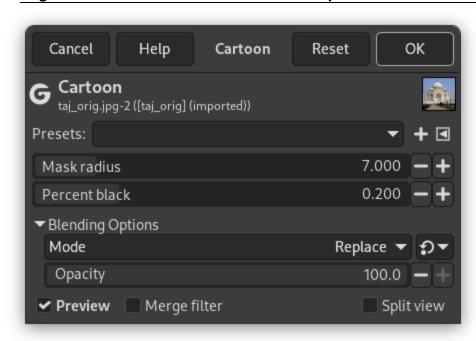
11.3.2. Activating the Filter

3/29/25, 9:33 PM 11.3. Cartoon

This filter is found in the main menu under Filters \rightarrow Artistic \rightarrow Cartoon....

11.3.3. Options

Figure 17.208. "Cartoon" filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

Mask radius

This parameter controls the size of areas the filter works with. Large values result in very thick black areas and much less detail in the resulting image. Small values result in more subtle pen strokes and more details preserved.

Percent black

This parameter controls the amount of black color added to the image. Small values make the blend from color regions to blackened areas smoother and dark lines themselves thinner and less noticeable. Larger values make the lines thicker, darker and sharper. The maximum value makes the lines aliased. The best, most natural results are usually achieved with an intermediate value.



3/29/25, 9:33 PM 11.4. Cubism

11.4. Cubism

11. Artistic Filters



11.4. Cubism

11.4.1. Overview

Figure 17.209. Example for the "Cubism"



Original image



Filter "Cubism" applied

The Cubism plug-in modifies the image so that it appears to be constructed of small squares of semitransparent tissue paper.



Tip

If setting possibilities of this filter are not enough for you, see <u>GIMPressionist</u> filter which offers more options.

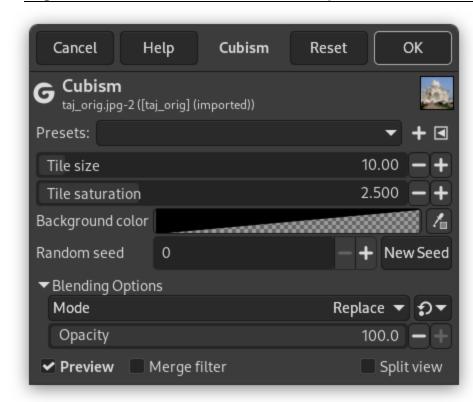
3/29/25, 9:33 PM 11.4, Cubism

11.4.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Artistic \rightarrow Cubism....

11.4.3. Options

Figure 17.210. "Cubism" filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

Tile size

This variable determines the size, in pixels, of the squares to be used. This is, in effect, the size of the little squares of tissue paper used in generating the new image. The slider can be used, the exact pixel size can be entered into the text box, or the arrow buttons can be used.

Tile saturation

This variable specifies how intense the color of the squares should be. This affects the opacity of the squares. A high value will render the squares very intensely and does not allow lower squares to show through. A lower value allows the lower squares to be more visible through the higher ones and causes more blending in the colors.

Background color

This allows you to change the background color that is used by this filter. You can click the color bar to select a color, or use the color picker to pick a color from your image.

Random seed, New Seed

This option controls the randomness of the filter. The Random seed box lets you manually enter a seed for the randomization algorithm used. You can also generate a random seed by pressing the New Seed button. If the same random seed is used in the same situation, the filter produces exactly the same results. A different random seed produces different results.

3/29/25, 9:33 PM 11.4. Cubism



Tip

If you are using this to generate background images for web pages and the like, work with a small range of colors painted randomly on a small square. Then apply the Cubism filter with the desired settings. As a last step, try Tile Seamless to adjust the image so it will tile seamlessly in your background.



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11.3. Cartoon



11.5. Glass Tile

3/29/25, 9:33 PM 11.5. Glass Tile

11.5. Glass Tile





11.5. Glass Tile

11.5.1. Overview

Figure 17.211. The same image, before and after applying glass tile effect.







Filter "Glass Tile" applied

After applying this filter, the active layer or selection is rendered as through a glass brick wall.

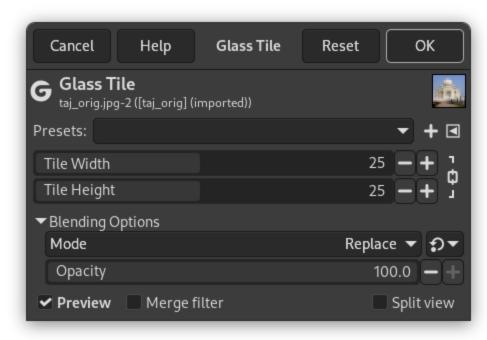
11.5.2. Activating the Filter

3/29/25, 9:33 PM 11.5. Glass Tile

This filter is found in the main menu under Filters \rightarrow Artistic \rightarrow Glass Tile....

11.5.3. Options

Figure 17.212. "Glass Tile" filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

Tile width, Tile height

Sets tile width and length (10-50 pixels).

By default, width and height are linked, indicated by the \Box chain symbol next to the input boxes. If you want to set width and height separately, click on that chain symbol to unlink them.





11.6. Oilify

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11.6. Oilify

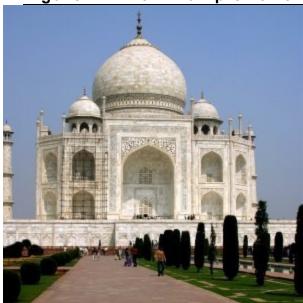
11. Artistic Filters



11.6. Oilify

11.6.1. Overview

Figure 17.213. Example for the "Oilify" filter



Original image



Filter "Oilify" applied

This filter makes the image look like an oil painting. The Mask size controls the outcome: a high value gives the image less detail, as if you had used a larger brush.



Tip

The GIMPressionist filter can produce similar effects, but allows a much wider variety of options.

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11.6.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Artistic \rightarrow Oilify....

11.6.3. Options

Figure 17.214. "Oilify" filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

Mask radius buffer, Exponent buffer

You can define two extra layers or channels that will be used as input for this filter.

Mask radius

Mask radius selects the size of the brush mask used to paint the oily render. Larger values here produce an oilier render.

Exponent

Exponent selects density of the brush mask used to paint the oily render.

Number of intensities

Size of the histogram: default is 128. Reducing the number of intensities results in a loss of details.

Intensity mode

Use pixel luminance values: to test.

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11.5. Glass Tile

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11.7. Photocopy

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11.7. Photocopy

11. Artistic Filters



11.7. Photocopy

11.7.1. Overview

Figure 17.215. Example for the "Photocopy" filter



Original image



Filter "Photocopy" applied

The Photocopy filter modifies the active layer or selection so that it looks like a black and white photocopy, as if toner transferred was based on the relative darkness of a particular region. This is achieved by darkening areas of the image which are measured to be darker than a neighborhood average, and setting other pixels to white.



Tip

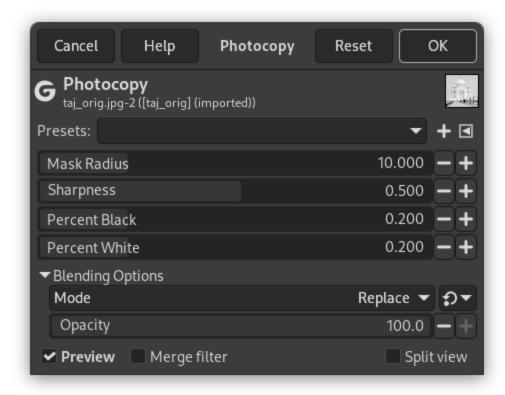
You may use this filter to sharpen your image. Create a copy of the active layer and use the filter on the copy. Set the <u>Layer Mode</u> to Multiply and

11.7.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Artistic \rightarrow Photocopy....

11.7.3. Options

Figure 17.216. "Photocopy" filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

Mask radius

This parameter controls the size of the pixel neighborhood over which the average intensity is computed and then compared to each pixel in the neighborhood to decide whether or not to darken it. Large values result in very thick black areas bordering the regions of white and much less detail for black areas. Small values result in less toner overall and more details everywhere.

Sharpness

With this option, you can set photocopy sharpness, from 0.0 to 1.0.

Percent black

This parameter controls the amount of black color added to the image. Small values make the blend from color regions to blackened areas smoother and dark lines themselves thinner and less noticeable. Larger values make the lines thicker, darker and sharper. The maximum value makes the lines aliased. The best, most natural results are usually achieved with an intermediate value. Values vary from 0.0 to 1.0.

Percent white

This parameter increases white pixels percentage.

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11.7. Photocopy



11.6. Oilify

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11.8. Simple Linear Iterative Clustering (SLIC)

11.8. Simple Linear Iterative Clustering (SLIC)



11. Artistic Filters



11.8. Simple Linear Iterative Clustering (SLIC)

11.8.1. Overview

This filter creates superpixels based on k-means clustering.

Superpixels are small cluster of pixels that share similar properties. Superpixels simplifies images with a great number of pixels making them more easy to be treated in many domains (computer vision, pattern recognition and machine intelligence). GIMP's aim is more humble: create a posterization effect.

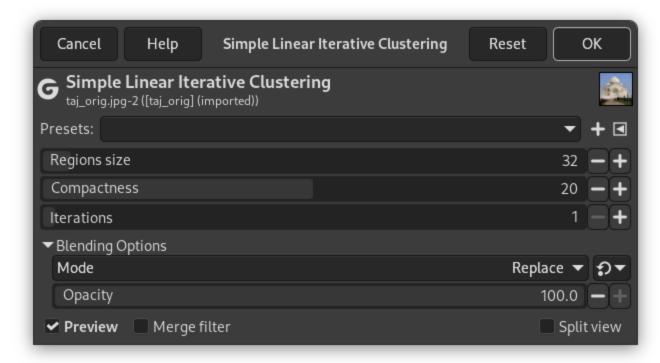
k-means clustering is one of the most used algorithms to create superpixels. Superpixel color is the mean of pixels color in the corresponding region.

11.8.2. Activating the Filter

This filter is found in the main menu under Filters → Artistic → Simple Linear Iterative Clustering....

11.8.3. Options

Figure 17.217. "Simple Linear Iterative Clustering" options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in <u>Section 2, "Common Features"</u>.

Regions size

Increasing regions size collects more pixels, and so superpixels size increases also.

Figure 17.218. "Regions size" example



Regions size = 16

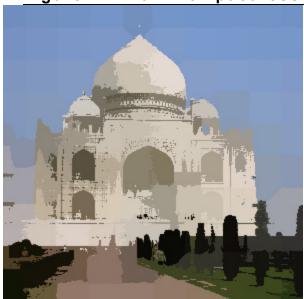


Regions size = 32

Compactness

Superpixels borders may be irregular. Increasing this option gives superpixels more regular border.

Figure 17.219. "Compactness" example



Compactness = 20



Compactness = 40: look at the dome.

Iterations

How many times filter is repeated. Increasing this value gives more details.

Figure 17.220. "Regions size" example



Iterations = 1 (default)



Iterations = 15











11.9. Softglow

3/29/25, 9:34 PM 11.9. Softglow

11.9. Softglow

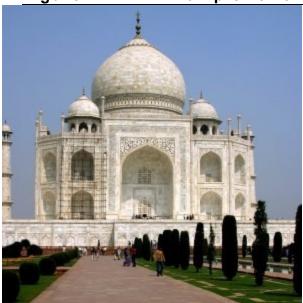
11. Artistic Filters



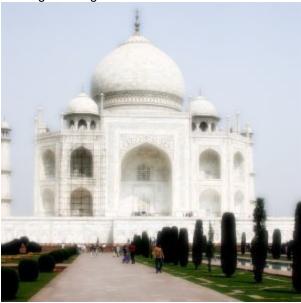
11.9. Softglow

11.9.1. Overview

Figure 17.221. Example for the "SoftGlow" filter



Original image



Filter "Softglow" applied

This filter lights the image with a soft glow, like the old trick smearing vaseline on the lens. Softglow produces this effect by making bright areas of the image brighter.

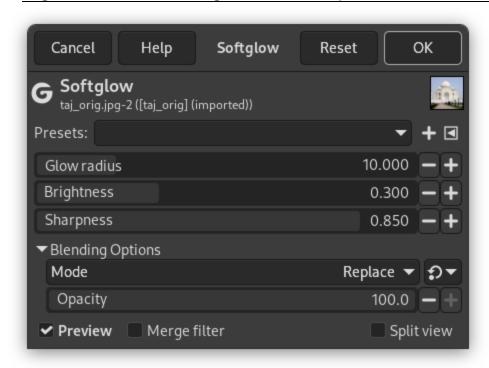
11.9.2. Activating the Filter

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This filter is found in the main menu under Filters \rightarrow Artistic \rightarrow Softglow....

11.9.3. Options

Figure 17.222. "Softglow" filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

Glow radius

The glow radius parameter controls the sharpness of the effect, giving a "vaseline-on-the-lens" effect.

Brightness

The brightness parameter controls the degree of intensification applied to image highlights.

Sharpness

The sharpness parameter controls how defined or alternatively diffuse the glow effect should be.





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11.10. Waterpixels



11. Artistic Filters



11.10. Waterpixels

11.10.1. Overview

Waterpixels is a filter based on superpixels and the watershed transformation. These algorithms are used to divide images in regions with similar color values.



Note

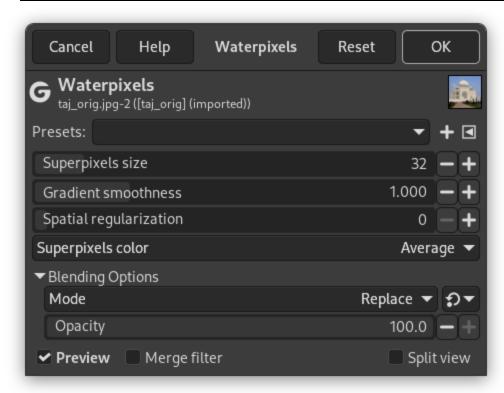
This filter can be slow to update on larger images.

11.10.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Artistic \rightarrow Waterpixels....

11.10.3. Options

Figure 17.223. "Waterpixels" options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

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Superpixels size

The size of the area used to pick a value from. Larger values means you will get less color regions.

Gradient smoothness

The smoothness of the gradient used in the computation. Higher values have less irregular borders.

Spatial regularization

Specifies how regular the regions should be. Low values are irregular. The higher the value, the more the regions start looking like squares.

Superpixels color

This selects how to choose the color for each region. By default Average is used. Which takes the average color of the pixels in the region. The other option is Random, which uses a random color.







11.9. Softglow



11.11. Clothify

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11.11. Clothify

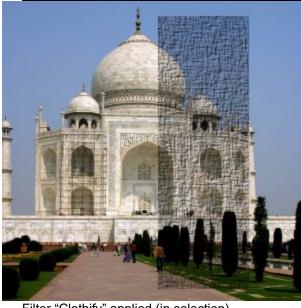




11.11. Clothify

11.11.1. Overview

Figure 17.224. Example of Clothify



Filter "Clothify" applied (in selection)

Clothify command is a script which adds a cloth-like texture to the selected region or alpha. If the image is in indexed colors, this menu entry is disabled.

This effect is achieved through the following steps:

- 1. Create an image in the same size as the original image, or selection or region in alpha if it is given, then add a layer to this image filled with white and noisified strongly.
- 2. Reproduce a layer from the recently added layer and set the mode of the upper layer to Multiply.
- 3. Apply <u>Gaussian blur</u> in different directions, horizontally on the lower layer by the given parameter Blur X as the radius, and vertically on the upper layer with Blur Y.
- 4. Merge these two layers into an image and make its contrast <u>expanded as possibly</u>, then slightly noisify again on this working image.
- 5. Finally do <u>bump map</u> on the original image by the working image with parameters Azimuth, Elevation, and Depth.

11.11.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Artistic \rightarrow Clothify....

11.11.3. Options

Figure 17.225. "Clothify" filter options

3/29/25, 9:36 PM 11.11. Clothify



Azimuth, Elevation, and Depth come from Bump Map filter.

Blur X. Blur Y

These parameters lengthen fibers of the texture, horizontally by Blur X, and vertically by Blur Y. The range of value is between 3 to 100.

Azimuth

Azimuth slider controls the bearings where light comes from according to the point of the compass. Both the minimum value (0.00) and the maximum value (360.00) are the direction of three o'clock on the dial panel of an analogue clock. Increasing value goes counter-clockwise.

Elevation

Elevation slider controls the height where light comes from. For the minimal value (0.50) the light comes from horizon, and for the maximum value (90.0) the light comes from zenith.

Depth

Depth slider controls distance between bump height and hollow depth. Increasing value causes more rugged features. Values vary from 1 to 65.



11.12. GIMPressionist



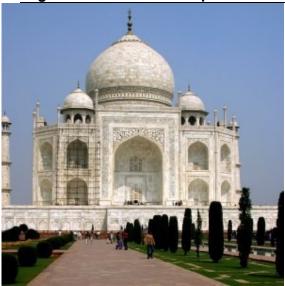




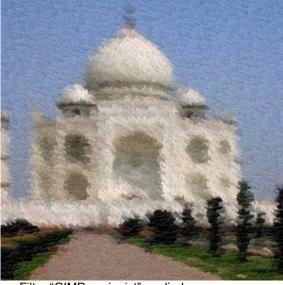
11.12. GIMPressionist

11.12.1. Overview

Figure 17.226. Example for the "GIMPressionist" filter



Original image



Filter "GIMPressionist" applied

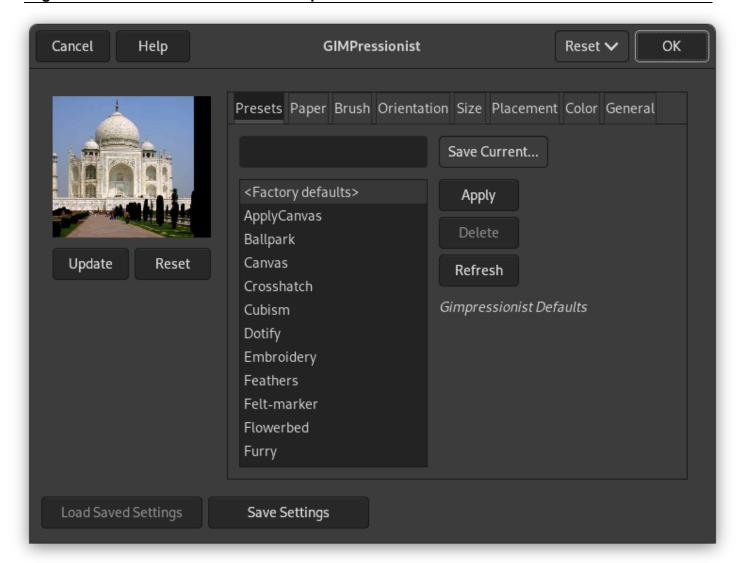
This filter can do what <u>Cubism</u> and <u>Apply Canvas</u> do and much more. It gives your image the look of a painting. All is going as if your image was painted again on a paper and with a brush you'd have chosen. It works on the active layer or selection.

11.12.2. Activating the Filter

This filter is found in the main menu under Filters \to Artistic \to GIMPressionist....

11.12.3. Options

Figure 17.227. GIMPressionist options



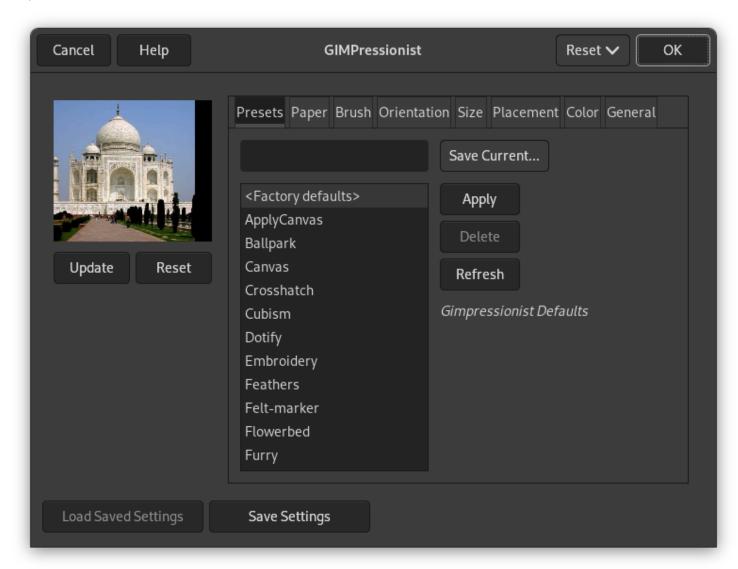
The dialog window consists of a small Preview area on the left, which is always visible, and a huge amount of GIMPressionist options organized in tabs.

11.12.3.1. Preview

All your setting changes will appear in the Preview without affecting the image until you click on OK. The Update button refreshes the preview window (it is not automatic, GIMPressionist has so much work to do!), and the Reset button reverts to the original image.

11.12.3.2. Presets tab

Figure 17.228. "Presets" tab options



GIMPressionist has a lot of parameters. When combined, they give an astronomical number of possibilities. So, it is important, when an interesting preset has been found, to save it and also to send it to the plug-in author if exceptional. Per contra, the intricacy of all these parameters makes difficult understanding and foreseeing how each one works.

Presets options

Save Current

Save current parameters. You can give a name in the input box on the left and a short description in the dialog that appears.

Apply

Load the parameters of the selected preset in the list.

Delete

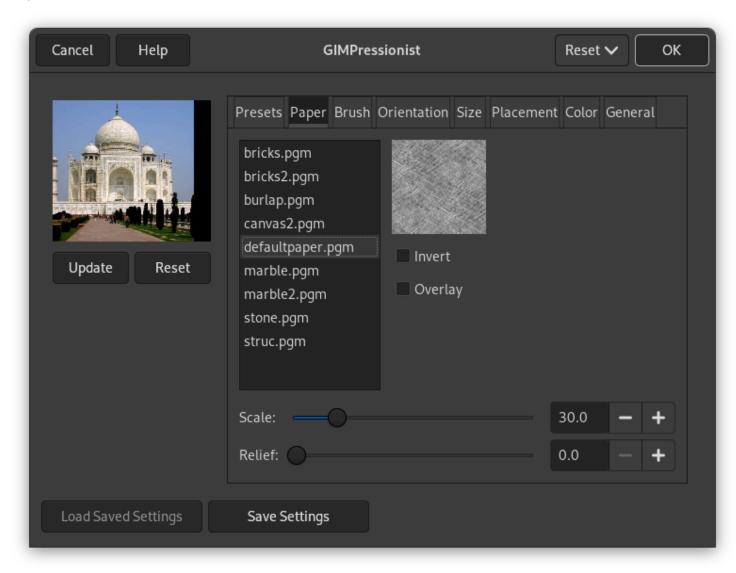
Delete the selected preset. You can delete only the presets you have created.

Refresh

Update the preset list.

11.12.3.3. Paper tab

Figure 17.229. "Paper" tab options



This tab concerns the texture of the canvas your image will be painted on. You have a list of textures and a Preview for the selected texture. A description is displayed on the right for every texture when selected.

Paper options

Invert

Inverts the paper texture: what was a hollow turns to a bump and vice-versa.

Overlay

Apply the paper as it, without embossing it. It looks like if a transparent paper has been overlaid on the image.

Scale

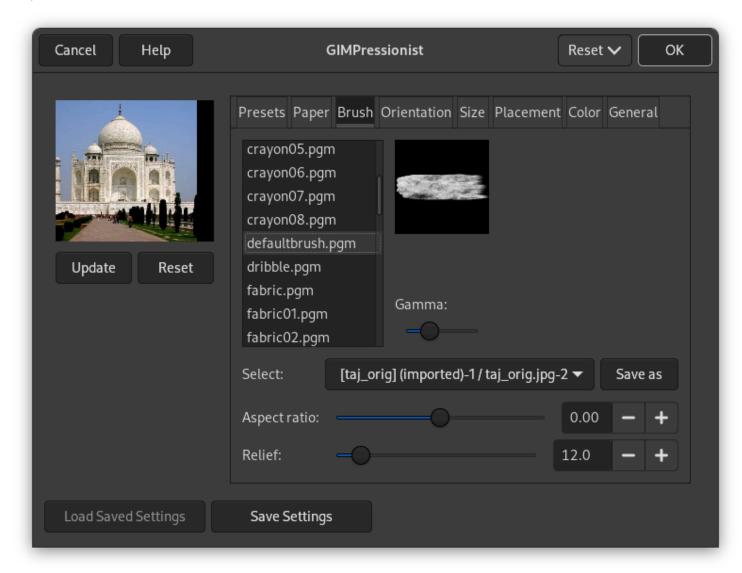
Specifies the scale of the texture (in % of the original file): controls the graininess of the texture.

Relief

Specifies the amount of embossing to apply (3-150).

11.12.3.4. Brush tab

Figure 17.230. "Brush" tab options



"Brush" is a general term for any material used to paint. A list of brushes is available with a Preview for the selected one.

Brush options

Gamma

Changes the gamma (luminosity) of the selected brush. The gamma correction brightens or darkens midtones.

Select

You can also use a brush pattern you have created by selecting its image (arrow button on the Select line). This image must be on your screen before you launch the filter to be taken in account. Of course, don't use big images. If your image has several layers, they also will be displayed in the Select list and can be used as a brush. When selected, the layer appears in the brush preview and the normal brush is deselected.

The Save as button allows you to save the selected brush.

Aspect ratio

Specifies the brush proportions, height (0 -1) and width (0 +1).

Relief

Specifies the amount of paint used for each stroke. This may evoke painting with a palette knife.

11.12.3.5. Orientation tab

Figure 17.231. "Orientation" tab options



This tab allows to set the orientation of the brush strokes. A painter is not obliged to go over with the same paintbrush angle. To perform some effects, he can vary their orientation.

Orientation options

Directions

With this option, you can set how many times the brush will pass through a same place, with each time a different direction, resulting in a more and more thick paint.

Start angle

Specifies the general direction of the strokes, the angle that the angle range will start from. Directions are often chosen to give some movement to the image.

Angle span

Specifies the angle, the sector, of the stroke "fan".

Orientation

Specifies the direction of the brush strokes.

Value

Let the value (luminosity) of the region determine the direction of the stroke.

Radius

The distance from the center of the image determines the direction of the stroke.

Random

Select a random direction for each stroke.

Radial

Let the direction from the center determine the direction of the stroke.

Flowing

Not a direction question here: the strokes follow a "flowing" pattern.

Hue

Let the hue of the region determine the direction of the stroke.

Adaptive

The brush direction that matches the original image the closest is selected.

Manual

The Edit button opens the Edit orientation Map dialog that allows you to set the directions manually.

11.12.3.6. Size tab

Figure 17.232. "Size" tab options



This tab allows you to set the number of brush sizes that will be used to paint, the limits of variation of these sizes and the criterion used to determine them.

Size options

You can specify how many brush sizes are to be used and their sizes.

Sizes

The number of brush sizes to use.

Minimum size, Maximum size

The brush sizes are between these two values. The greater the size, the greater the length and width of strokes.

Size

You have there options to specify how the size of strokes will be determined.

Value

Let the value (luminosity) of the region determine the size of the stroke.

Radius

The distance from the center of the image determines the size of the stroke.

Random

Select a random size for each stroke.

Radial

Let the direction from the center determine the size of the stroke.

Flowing

Not a length question here: the strokes follow a "flowing" pattern.

Hue

Let the hue of the region determine the size of the stroke.

Adaptive

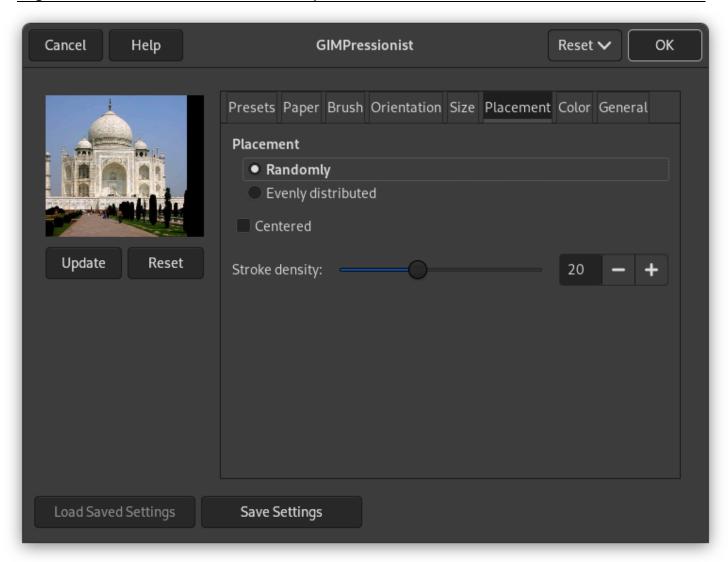
The brush size that matches the original image the closest is selected.

Manual

The Edit button opens the Size Map Editor. That allows you to specify the size of strokes by yourself.

11.12.3.7. Placement tab

Figure 17.233. "Placement" tab options



In this tab you can set how strokes will be distributed.

Placement options

Placement

In the preview of the Orientation Map Editor, all small arrows look like a flow around objects. Inside this flow, strokes may be placed in two different ways:

Randomly

Places strokes randomly. This produces a more realistic paint.

Evenly distributed

Strokes are evenly distributed across the image.

Stroke density

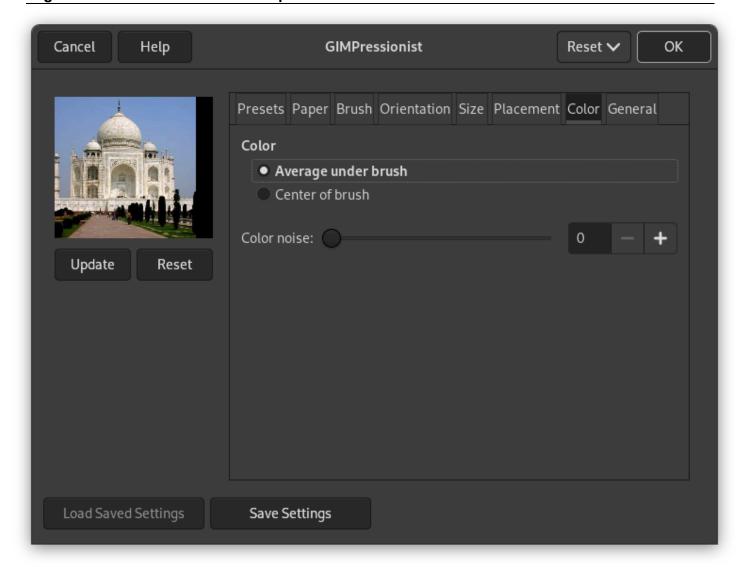
The greater the density the closer the strokes. With a low density, the paper or background may be visible in unstroke areas.

Centered

Focus brush strokes around center.

11.12.3.8. Color tab

Figure 17.234. "Color" tab options



In this tab, you can set what the stroke color will be.

Color options

Color

You can set the stroke color in two ways:

Average under brush

Stroke color is computed from the average of all pixels under the brush.

Center of brush

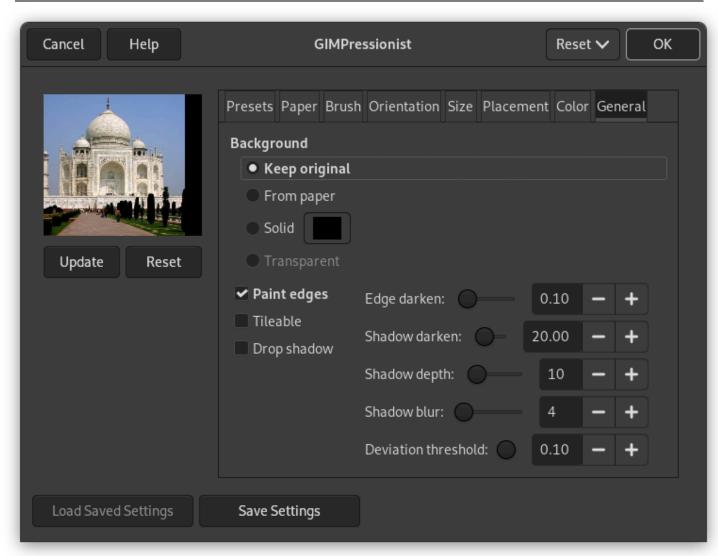
Samples the color from the pixel in the center of the brush.

Color noise

This slider, and its input box, allow you to introduce noise in the stroke color, that will look less homogeneous.

11.12.3.9. General tab

Figure 17.235. "General" tab options



In this tab you can set what will be the background and the relief of brush strokes.

General options

Background

Keep original

The original image will be used as a background.

From paper

Copy the texture of the selected paper as a background.

Solid

By clicking on the color button you can select a solid colored background.

Transparent

Use a transparent background. Only the painted strokes will be visible. This option is available only if your image has an alpha channel.

Paint edges

If it is disabled, a thin border will not be painted around the outside border of the image.

Tileable

If checked, the resulting image will be seamlessly tileable. The right side will match the left side and the top will match the bottom. This is interesting if your image will be repeatedly used in a Web background.

Drop shadow

Add a shadow effect to each brush stroke.

Edge darken

How much to darken the edges of each brush stroke. This increases paint relief or thickness.

Shadow darker

How much to darken the brush shadow.

Shadow depth

How far apart from the object the drop shadow should be.

Shadow blur

How much to blur the drop shadow.

Deviation threshold

A bail-out value for adaptive selections of brush size.

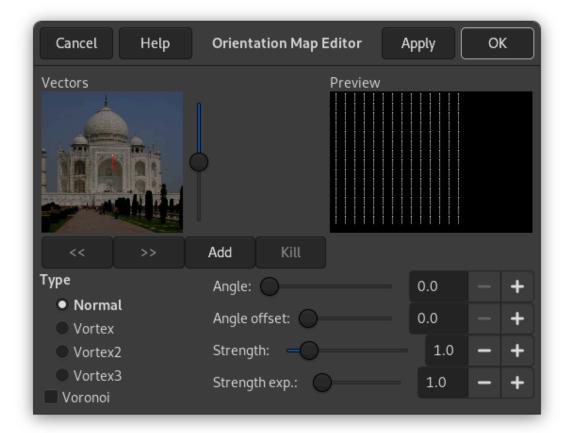
11.12.4. Orientation Map Editor

11.12.4.1. Overview

The Orientation-map editor is an annexe of the <u>GIMPressionist</u> filter. You can get to it by clicking on the Edit button in the <u>Orientation</u> tab. With this editor, you can set the direction that brush strokes given by filter will have.

11.12.4.2. Options

Figure 17.236. Options of the "Orientation-map Editor" dialog



You can place one or several vectors. You can set their direction and their strength. They will act on the corresponding area of the image.

Vectors

In the left window (Vectors) you can manage your vectors. By default, a vector is at center. Vectors are red when they are active, and gray when they are not with a white point at tip.

- By clicking on the Add button, you add a vector at center of the window, whereas clicking with the mouse Middle Button puts it where you click.
- Clicking with the mouse Left Button displaces the selected vector to the clicked point.
- When clicking with the mouse Right Button, the selected vector points to where you have clicked.
- Clicking on << and >> buttons displaces focus from a vector to another.
- The Delete button allows you to delete the selected vector.



Tip

With the scroll bar on the right of the Vectors panel, you can set the image brightness. This can be very useful if the image is very dark/bright and you can't see vectors well.

Preview

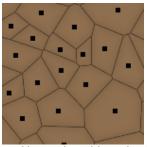
This Preview gives you an idea of the action of the various vectors. The slider on the right border lets you change the luminosity of this preview.

Type

You have there some types to arrange the brush strokes within the selected vector domain. Describing them is difficult, but you can see the result in the Preview.

Voronoi

A Voronoi's diagram consists in partitioning a plane with n master points into n polygons where each polygon has only one of these n master points and where any given other point of the polygon is closer to the master point than to any other. So each polygon limit is midway between two master point. Here is an example of a Voronoi's diagram:



Here, when this option is checked, only the vector closest to a given point of the image influences this point.

Angle

Direction of the selected vector. This slider has the same action as right-clicking (see above).

Angle offset

This slider allows you to change the angle of all vectors.

Strength

This slider acts on the influence domain of the selected vector. This influence lowers with distance. Strength is showed with the vector length.

Strength exp.

This slider acts on the length of all vectors, and so changes the strength of all brush strokes.

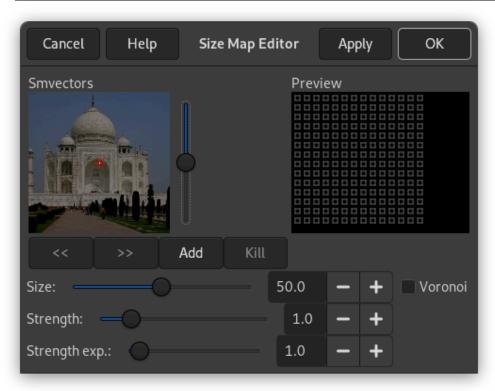
11.12.5. Size Map Editor

11.12.5.1. Overview

The Size-map editor is an annexe of the <u>GIMPressionist</u> filter. You can get to it by clicking on the Edit button in the <u>Size</u> tab. With this editor, you can set the size that brush strokes given by filter will have.

11.12.5.2. Options

Figure 17.237. Size-map editor options



You can place one or several vectors. You can set their strength. They will act on the corresponding area of the image.

Smvectors

In this window you can place your vectors. By clicking on the Add button, you add a vector at the center of the window, whereas clicking with the mouse Middle Button puts it where you click. Vectors are red when selected, and gray when they are not, with a white point at tip.

Clicking with the mouse Left Button displaces the selected vector to the clicked point.

Clicking on the mouse Right Button has no evident action.

Clicking on << and >> buttons displaces focus from a vector to another.

The Kill button allows you to delete the selected vector.



Tip

With the scroll bar on the right of the Vectors panel, you can set the image brightness. This can be very useful if the image is very dark/bright and you can't see vectors well.

Preview

This Preview gives you an idea of the action of the different vectors. The size of squares represent the size of the brushes and their strength.

Size

Change the size of the brush strokes in the selected vector domain.

Strenath

This slider acts on the influence domain of the selected vector. This influence lowers with distance.

Strength exp.

Change the exponent of the stroke.

Voronoi

See Orientation Map Editor for an explanation.







11.11. Clothify



11.13. Van Gogh (LIC)

11.13. Van Gogh (LIC)



11. Artistic Filters



11.13. Van Gogh (LIC)

11.13.1. Overview

Figure 17.238. From left to right: original image, map, resulting image



Map has three stripes: a solid black area, a vertical gradient area, a solid white area. One can see, on the resulting image, that image zones corresponding to solid areas of the map, are not blurred. Only the image zone corresponding to the gradient area of the map is blurred.

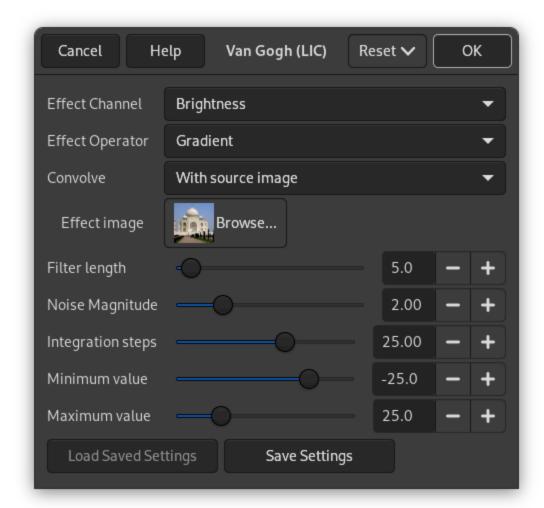
"LIC" stands for Line Integral Convolution, a mathematical method. This filter is used to apply a directional blur to an image, or to create textures. It could be called "Astigmatism" as it blurs certain directions in the image. It uses a blur map. Unlike other maps, this filter doesn't use gray levels of this blur map. Filter takes in account only gradient direction(s). Image pixels corresponding to solid areas of the map are ignored.

11.13.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Artistic \rightarrow Van Gogh (LIC)....

11.13.3. Options

Figure 17.239. "Van Gogh (LIC)" filter options





Tip

- To create a blur, check With Source Image. Only Filter Length slider and perhaps Integration Steps slider, are useful.
- To create a texture, check With White Noise . All sliders can be useful.

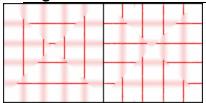
Effect Channel

By selecting Hue, Saturation or Brightness (=Value), filter will use this channel to treat image.

Effect Operator

The "Derivative" option reverses "Gradient " direction:

Figure 17.240. Derivative option example



Using a square gradient map, Effect operator is on "Gradient" on the left, on "Derivative" on the right: what was sharp is blurred and conversely.

Convolve

You can use two types of convolution. That's the first parameter you have to set:

With white noise

White noise is an acoustics name. It's a noise where all frequencies have the same amplitude. Here, this option is used to create patterns.

With source image

The source image will be blurred.

Effect image

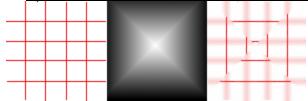
That's the map for blur or pattern direction. This map must have the same dimensions as the original image. It must be preferably a grayscale image. It must be present on your screen when you call filter so that you can choose it in the drop-list.

Figure 17.241. Blurring with vertical gradient map



With a vertical gradient map, vertical lines are blurred.

Figure 17.242. Blurring with a square gradient map



The gradient map is divided into four gradient triangles: each of them has its own gradient direction. In every area of the image corresponding to gradient triangles, only lines with the same direction as gradient are blurred.

Figure 17.243. Texture example

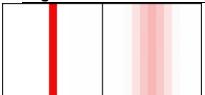


The "With white noise" option is checked. Others are default. With a vertical gradient map, texture "fibres" are going horizontally.

Filter length

When applying blur, this option controls how important blur is. When creating a texture, it controls how rough texture is: low values result in smooth surface; high values in rough surface.

Figure 17.244. Action example of Filter Length on blur



On the left: a vertical line, one pixel wide (zoom 800%). On the right: the same line, after applying a vertical blur with a Filter Length to 3. You can see that blur width is 6 pixels, 3 pixels on both sides.

Figure 17.245. Filter Length example on texture



On the left: a texture with Filter Length=3. On the right, the same texture with Filter Length=24.

Noise magnitude

This options controls the amount and size of White Noise. Low values produce finely grained surfaces. High values produce coarse-grained textures.

Figure 17.246. Action example of Noise Magnitude on texture

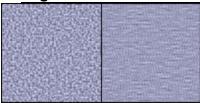


Noise magnitude = 4

Integration steps

This options controls the influence of gradient map on texture.

Figure 17.247. Action example of Integration Steps on texture

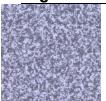


On the left: Integration Steps = 2. On the right: Integration Steps = 4.

Minimum value, Maximum value

Both values determine a range controlling texture contrast: shrunk range results in high contrast and enlarged range results in low contrast.

Figure 17.248. Action example of min/max values on texture



Minimum value = -4.0. Maximum value = 5.0.







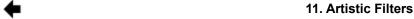




11.14. Weave

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11.14. Weave

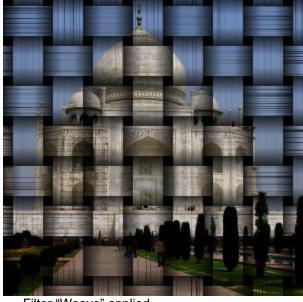




11.14. Weave

11.14.1. Overview

Figure 17.249. Example of Weave



Filter "Weave" applied

The Weave command is a Script-Fu script which creates a new layer filled with a weave effect and adds it to the image as an overlay or bump map. The result of the image looks as if it were printed over woven ribbons of paper, thin wooden sheet, or stripped bamboo.

If the image is in indexed colors, this menu entry is disabled.

This filter adds a "Multiply" mode layer upon the layer where you activate this command. The weave texture is rendered in gray levels.

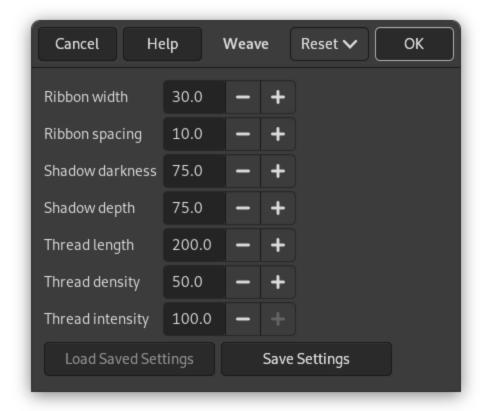
11.14.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Artistic \rightarrow Weave....

11.14.3. Options

Figure 17.250. "Weave" filter options

3/29/25, 9:36 PM 11.14. Weave



For to make coarse mesh texture, increase the ribbon spacing and/or decrease the ribbon width. For to strain ribbons hard, decrease the shadow depth.

Ribbon width

With this option you can set the tape width in pixel between 0.0 and 256.0. In default, 30.0 pixels is set.

Ribbon spacing

With this option you can set the distance to the neighboring ribbon or the size of black square hole in pixel between 0.0 and 256.0. In default, 10.0 pixels is set.

Shadow darkness

With this option you can set the darkness at crossings of lower ribbon in percentage. Lower value shows ribbons thinner, 75.0 percent is the default value.

Shadow depth

With this option you can set the bent strength of ribbons in percentage. Higher value shows ribbons more wavy, lower value for flat surface. The actual effect is limited by the Shadow darkness. 75.0 percent is the default value.

Thread length

With this option you can set the regularity of stripe texture. If this value is shorter than the summary of the ribbon width and twice of the ribbon spacing, the surface of ribbon becomes speckled. Set this value in pixel on range between 0.0 to 256.0. The default value is 200.0.

Thread density

With this option you can set the density of fiber-like parallel short stripes on the surface of ribbons. To populate stripes increase this value. 50.0 percent is the default value.

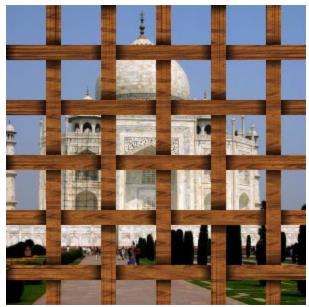
Thread intensity

With this option you can set the opacity of stripe texture. Lower value shows threads vague. To clear off threads set the value to 0.0 percent. The default value is 100.0 percent.

11.14.4. Another usage

Figure 17.251. Adding a lattice using "Weave" texture

3/29/25, 9:36 PM 11.14. Weave



Narrower the ribbon width, wider the ribbon spacing, and filled with the "Wood #1" pattern.

This texture can be a lattice that you can see the original image through its mesh holes. Add a new, transparent layer over the active layer for the lattice, and apply this filter. Select a black regular square in the texture layer using the Select By Color tool, then delete black squares in selection on the texture layer to be chink holes. Reverse the selection, and activate the transparent layer so that you can fill the lattice surface with a pattern, then drag and drop your favorite pattern over the image window.



11.13. Van Gogh (LIC)







12. Decor Filters

3/29/25, 9:37 PM 12. Decor Filters

12. Decor Filters



Chapter 17. Filters



12. Decor Filters

12.1. Introduction

Decor filters create decorative borders, and some of them add some special effects to the image. This category describes the following filters:

- Section 12.2, "Add Bevel"
- Section 12.3, "Add Border"
- Section 12.4, "Fog"
- Section 12.4, Fog Section 12.5, "Fuzzy Border" Section 12.6, "Old Photo" Section 12.7, "Round Corners" Section 12.8, "Slide"

- Section 12.9, "Stain"
- Section 12.10, "Stencil Carve"
- Section 12.11, "Stencil Chrome"







11.14. Weave



12.2. Add Bevel

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12.2. Add Bevel



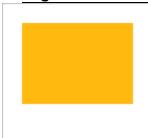
12. Decor Filters



12.2. Add Bevel

12.2.1. Overview

Figure 17.252. Example for the "Add Bevel" filter



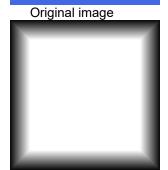
Original image, the colored rectangle is selected



"Add Bevel" applied

This filter adds a slight bevel to an image using a <u>bump map</u> (see below). If there is a selection, it is bevelled, otherwise the filter has no effect.

Figure 17.253. Another "Add Bevel" example, with bumpmap



3/29/25, 9:37 PM 12.2. Add Bevel



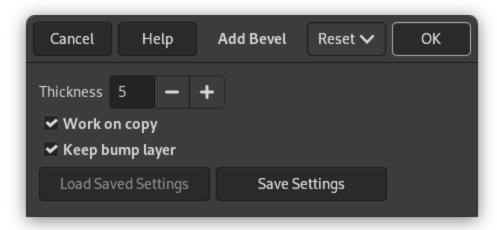
Filter applied

12.2.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Decor \rightarrow Add Bevel....

12.2.3. Options

Figure 17.254. "Add Bevel" options



Thickness

You can specify the thickness of the bevel, in pixels. Maximal thickness is 30 pixels.

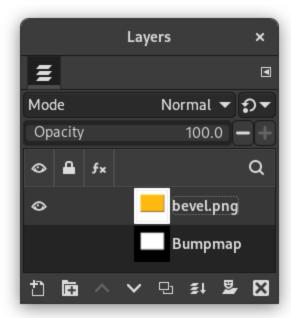
Work on copy

If checked, the filter creates a new window containing a copy of the image with the filter applied. The original image remains unchanged.

Keep bump layer

When checked, you will keep the generated bumpmap as a new, not visible layer:

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Layers Dialog with "Keep bump layer" enabled



3/29/25, 9:37 PM 12.3. Add Border

12.3. Add Border





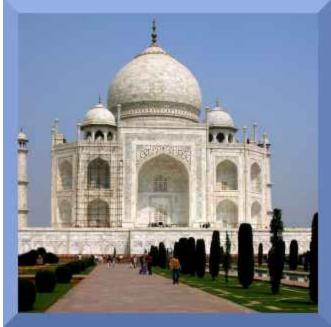
12.3. Add Border

12.3.1. Overview

Figure 17.255. Example for the "Add Border" filter



Original image



Border added

This filter just does what its name says: it adds a border to the image. You can specify the thickness of the border as well as the color. The four sides of the border are colored in different shades, so the image area will appear raised. The image will be enlarged by the border size, it won't be painted over.

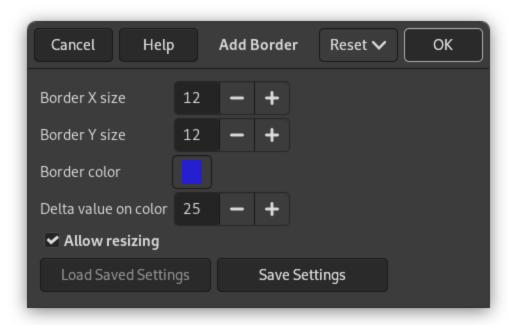
3/29/25, 9:37 PM 12.3, Add Border

12.3.2. Activating the Filter

This filter is found in the main menu under Filters → Decor → Add Border....

12.3.3. Options

Figure 17.256. "Add Border" options



Border X size, Border Y size

Here you can select the thickness of the added border, in pixels. X size (left and right) and Y size (top and bottom) may be different. Maximum is 250 pixels.

Border color

Clicking on this button brings up the color selector dialog that allows you to choose an "average" border color (see below, Delta value on color).

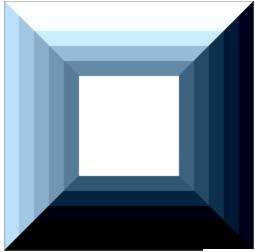
Delta value on color

This option makes the border sides to be colored in different shades and thus makes the image to appear raised. The actual color of the respective border side is computed for every color component red, green, and blue $\frac{[10]}{10}$ from the "average" Border color as follows (resulting values less than 0 are set to 0, values greater than 255 are set to 255):

- Top shade = Border color + Delta
- Right shade = Border color ½ Delta
- Bottom shade = Border color Delta
- Left shade = Border color + ½ Delta

Figure 17.257. Delta examples

3/29/25, 9:37 PM 12.3. Add Border



"Add Border" filter applied with Delta value on color 25, then with 75, 125, 175, and 225.

Example: the default color is blue (38,31,207), default delta is 25. So the shades of the borders are: top: (38,31,207) + (25,25,25) = (63,56,232), right: (38,31,207) + (-13,-13,-13) = (25,18,194), etc.

Allow resizing

By default, the image size is increased by twice the specified border size to create the border in this additional space. If your image already has the intended final size, disable this option.

[10] See <u>image types</u> or <u>RGB</u>.



12.2. Add Bevel





3/29/25, 9:37 PM 12.4. Fog

12.4. Fog





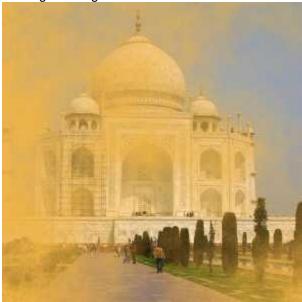
12.4. Fog

12.4.1. Overview

Figure 17.258. Example for the "Fog" filter



Original image



"Fog" applied

This filter adds a new layer with some clouds to the image that look like fog or smoke. The clouds are created with the Plasma texture.

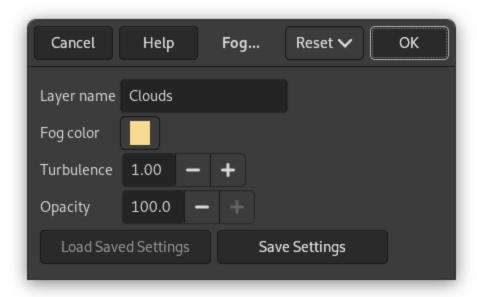
12.4.2. Activating the Filter

3/29/25, 9:37 PM 12.4. Fog

This filter is found in the main menu under Filters \rightarrow Decor \rightarrow Fog....

12.4.3. Options

Figure 17.259. "Fog" options



Among the few filter options, only "Turbulence" is somewhat important, because you can't change it later and have to undo and repeat the filter if the result doesn't fit your desire.

Layer name

The name of the layer. You can change it later in the Layers Dialog.

Fog color

Defaults to some kind of sandy brown (240, 180, 70). Click on the color button to change this if you think that is not the natural color of fog.

Turbulence

This is actually the Turbulence option of the <u>Plasma</u> filter: it controls the complexity of the clouds, from soft (low values) to hard (high values).

Opacity

The opacity of the layer. You can change it later in the Layers Dialog.



12.5. Fuzzy Border

12. Decor Filters



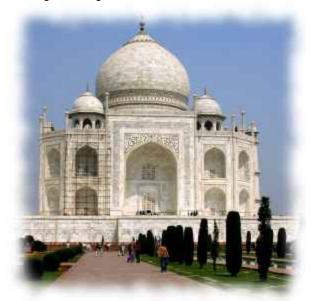
12.5. Fuzzy Border

12.5.1. Overview

Figure 17.260. Example for the "Fuzzy Border" filter



Original image



"Fuzzy Border" applied

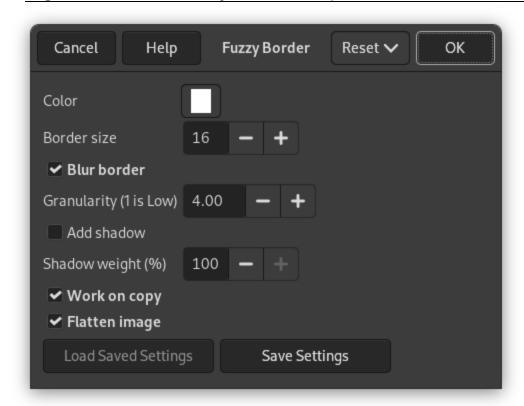
This filter adds a cool fading border to an image. The border will look jagged and fuzzy, and you can specify color and thickness of the fading border. Optionally you may add a shadow to the image.

12.5.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Decor \rightarrow Fuzzy Border....

12.5.3. Options

Figure 17.261. "Fuzzy Border" options



Color

Clicking on this button brings up the color selector dialog that allows you to choose the border color.

Border size

Here you can set the thickness of the fuzzy border, in pixels. Maximum is 300 pixels, regardless of the image width or height.

Blur border

If checked, the border will be blurred. The example below shows the effect of blurring:

Figure 17.262. "Blur border" example





"Blur" unchecked

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Figure 17.263. "Blur border" zoomed (1600%)





"Blur" unchecked

Granularity

The border's granularity is almost the size of pixel blocks spread to create the effect of a jagged and fuzzy border.

Figure 17.264. Granularity example (without blurring)



Granularity 1 (min)



Granularity 4 (default)

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Granularity 16 (max)

Add shadow

If checked, the filter will also create a shadow at the border.

Figure 17.265. "Add shadow" example



"Add shadow" checked, shadow weight 100% (default shadow weight).



"Add shadow" with shadow weight 10%.



"Add shadow" unchecked (default)

Shadow weight

If Add shadow is checked, you may set the shadow opacity here. Defaults to 100% (full opacity).

Work on copy

If checked, the filter creates a new window containing a copy of the image with the filter applied. The original image remains unchanged.

Flatten image

If unchecked, the filter keeps the additional layers it used to create the border and the shadow (if demanded). Default is to merge down all layers.

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12.5. Fuzzy Border



12.4. Fog

1

12.6. Old Photo

3/29/25, 9:38 PM 12.6. Old Photo

12.6. Old Photo





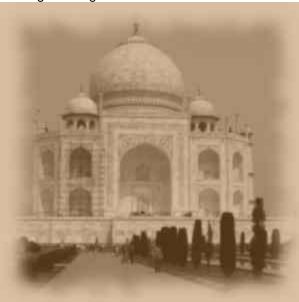
12.6. Old Photo

12.6.1. Overview

Figure 17.266. Example for the "Old Photo" filter



Original image



"Old Photo" applied

This filter makes an image look like an old photo: blurred, with a jagged border, toned with a brown shade, and marked with spots.

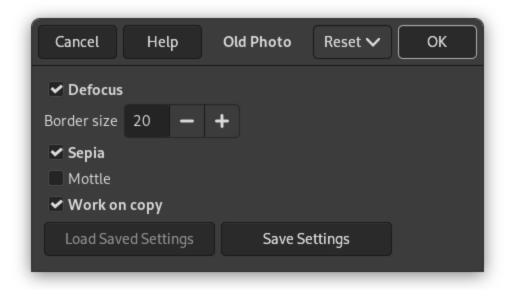
12.6.2. Activating the Filter

3/29/25, 9:38 PM 12.6. Old Photo

This filter is found in the main menu under Filters \rightarrow Decor \rightarrow Old Photo....

12.6.3. Options

Figure 17.267. "Old Photo" options



Defocus

If checked, a Gaussian blur will be applied to the image, making it less clear.

Figure 17.268. Example for the "Defocus" option





Defocus disabled

Border size

When you choose a border size > 0, the <u>Fuzzy Border</u> filter will be applied to the image, adding a white, jagged border.

Sepia

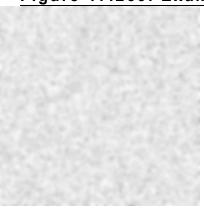
3/29/25, 9:38 PM 12.6. Old Photo

If checked, the filter reproduces the effect of aging in old, traditional black-and-white photographs, toned with sepia (shades of brown). To achieve this effect, the filter desaturates the image, reduces brightness and contrast, and modifies the color balance. [12]

Mottle

When you check this option, the image will be marked with spots.

Figure 17.269. Example for the "Mottle" option



A plain white image mottled (without Defocus or Sepia)

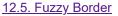
Work on copy

If checked, the filter creates a new window containing a copy of the image with the filter applied. The original image remains unchanged.

[11] See Wikipedia [WKPD-SEPIA].

[12] Compare Section 8.2, "Color Balance".











12.7. Round Corners

12.7. Round Corners





12.7. Round Corners

12.7.1. Overview

Figure 17.270. Example for the "Round Corners" filter



Original image



"Round Corners" applied

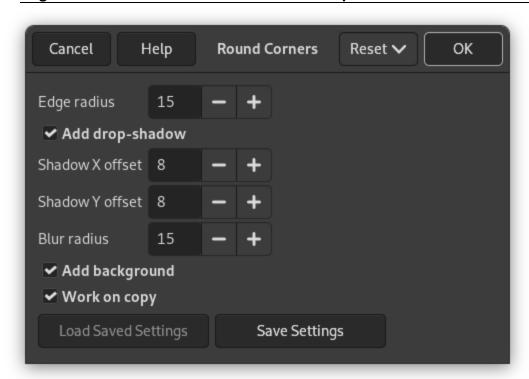
This filter rounds the corners of an image, optionally adding a drop-shadow and a background layer. The filter works on RGB and grayscale images that contain only one layer. It creates a copy of the image or can optionally work on the original. It uses the current background color to create a background layer.

12.7.2. Activating the Filter

This filter is found in the main menu under Filters → Decor → Round Corners....

12.7.3. Options

Figure 17.271. "Round Corners" options



Edge radius

Rounding corners is done by selecting a quarter of a circle at every corner and removing the area not covered by this selection. The "edge radius" is the radius of the constructing circle.

In the examples below, the filter was applied to a 100×100 pixels image, with varying edge radius. For radius = 50, the four quadrants just form a circle with diameter = 100, which exactly fits into the original image outline. A radius greater than 50 is possible, but look what happens:

Figure 17.272. Edge radius examples



A 100×100 pixels image, edge radius: 15 (default).



Edge radius: 35.



Edge radius: 50.



Edge radius: 65. Ouch!

Add drop-shadow

When this option is checked, the filter will cast a shadow behind your image after rounding the image corners.

Shadow X/Y offset

X and Y offset determine where the shadow will be placed in relation to the image. Offset is measured in pixels. High values make the shadow look like it's far away, and low values will make it look closer to the image.

Figure 17.273. Shadow offset examples



Shadow X offset: 8, Y offset: 8 (default).



Shadow X offset: 16, Y offset: 4.

Note that the shadow offsets as well as the blur radius are limited to background area.

Blur radius

When Add drop-shadow is checked, you may select a blur radius, which will be used by the <u>Drop Shadow</u> filter. The image will be enlarged in both dimensions depending on the blur radius and the shadow offsets.

Add background

When you check this option (it is checked by default), the filter will add a background layer below the existing layer, filled with the current background color. The size of this new layer depends on the blur radius and the shadow offsets.

Work on copy

If checked, the filter creates a new window containing a copy of the image with the filter applied. The original image remains unchanged.







12.6. Old Photo

12.8. Slide

3/29/25, 9:38 PM 12.8. Slide

12.8. Slide





12.8. Slide

12.8.1. Overview

Figure 17.274. Example for the "Slide" filter



Original image



"Slide" applied

This filter makes your image look like a slide, by adding a slide-film like black frame, sprocket holes, and labels. If necessary, the image will be cropped to fit into an aspect ratio of width: height = 3:2. If image width is greater than image height, black frames will be added at the top and the bottom of the image, else the frames will be added on the left and right sides. You may select the color as well as the font of the text appearing on the frames. The current background color will be used for drawing the holes.

The script only works on RGB and grayscale images that contain one layer. Otherwise the menu entry is disabled.

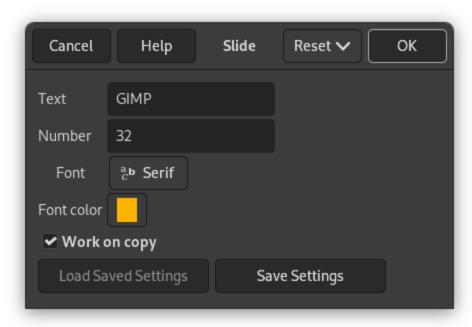
3/29/25, 9:38 PM 12.8. Slide

12.8.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Decor \rightarrow Slide....

12.8.3. Options

Figure 17.275. "Slide" options



Text

A short label that will be displayed in the top and bottom (or the left and right) of the frame. The text must be really short.

Number

Here you may enter a text for simulating consecutive numbers. Two numbers will be displayed: this number and this number with the character "A" appended.

Font

Clicking on this button opens the Font dialog, where you can choose a font for the text on the frame.

Fontcolor

Clicking on this button brings up a color selection dialog that allows you to choose the color of the text.

Work on copy

If checked, the filter creates a new window containing a copy of the image with the filter applied. The original image remains unchanged.



3/29/25, 9:38 PM 12.9. Stain

12.9. Stain





12.9. Stain

12.9.1. Overview

Figure 17.276. Example for the "Stain" filter



Original image



"Stain" applied with the gradient "Cold Steel 2"

This filter adds stains to the image.

Every stain is created in a layer of its own. The stain layers are randomly moved to let the stains spread out (at the end you may see the boundary of the moved top layer). So after applying the filter you can easily edit (e.g., move, scale, remove) the stains, or create additional stains using the filter again.

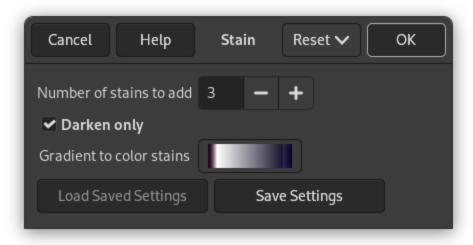
3/29/25, 9:38 PM 12.9. Stain

12.9.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Decor \rightarrow Stain....

12.9.3. Options

Figure 17.277. "Stain" options



Number of stains to add

The number of stains (1-10).

Darken only

Since every stain is created in a layer of its own, all layers have to be merged to make the appearance of the image. If this option is checked, the relevant <u>layer mode</u> is set to "Darken only", otherwise it is set to "Normal". The layer mode determines how the pixels of the layers are combined. If "Darken only" is unchecked we use "Normal" mode, and every stain covers the pixels of the layers below. If "Darken only" is checked, stains cover the corresponding pixels of the layers below them only if these pixels are lighter.

Gradient to color stains

The gradient that is used for created stains.



3/29/25, 9:39 PM 12.10. Stencil Carve

12.10. Stencil Carve



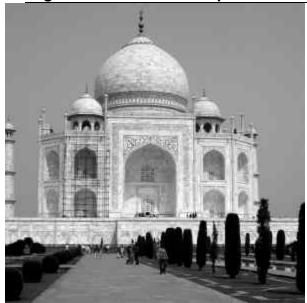
12. Decor Filters



12.10. Stencil Carve

12.10.1. Overview

Figure 17.278. Example for the "Stencil Carve" filter



Original image



"Stencil Carve" applied

This filter works with two images, source and target. The source image must be a grayscale image containing a single layer and no Alpha channel. This layer is used as selection mask and will work as stencil for the carving effect. The image to be carved (the target image) can be an RGB color or grayscale image, also with a single layer. This target image must have the same size as the source image.

3/29/25, 9:39 PM 12.10. Stencil Carve

12.10.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Decor \rightarrow Stencil Carve....

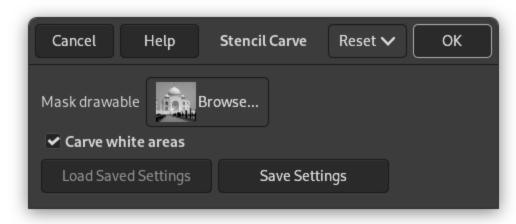


Tip

If this command remains disabled although the image is grayscale, check for an Alpha channel and delete it.

12.10.3. Options

Figure 17.279. "Stencil Carve" options



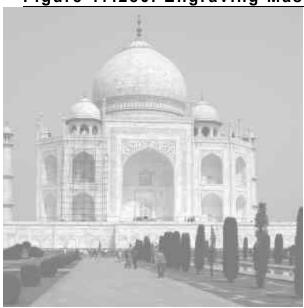
Mask drawable

Here you may select the target image and its layer or channel which the carving effect is applied to.

Carve white areas

If checked (default), the source image is used as stencil as described above. If unchecked, the *inverted* source image is used as stencil, e.g.:

Figure 17.280. Engraving Masks



Normal mask

3/29/25, 9:39 PM 12.10. Stencil Carve



Inverted mask

In the example below, the source is a grayscale image. The target is an image with a wood pattern.

On the left, Carve white areas is enabled. The pixels of the target image corresponding to white pixels in the stencil (around the text) have been carved. The result is an embossed text.

On the right, Carve white areas is disabled. The pixels of the target image corresponding to the black pixels in the stencil (the text) have been carved. The result is a hollow text.

Figure 17.281. Example for "Carve white areas"



White areas carved



Stencil



Black areas carved

Information about the many layers created by this filter can be found in [GROKKING].











12.11. Stencil Chrome

3/29/25, 9:39 PM 12.11. Stencil Chrome

12.11. Stencil Chrome





12.11. Stencil Chrome

12.11.1. Overview

Figure 17.282. Example for the "Stencil Chrome" filter



Original image



"Stencil Chrome" applied

This filter provides a chrome effect. The source image must be an image containing a single layer. This layer is used as mask ("stencil") for the chrome effect.

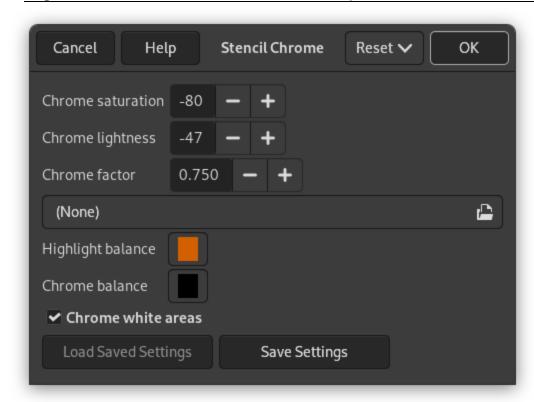
The filter creates a new image with the chrome effect applied to the source image or, if a selection exists, to the selection of the source image (a nice background is added too). If no environment map image is specified, a copy of the source image will be used.

12.11.2. Activating the Filter

This filter is found in the main menu under Filters → Decor → Stencil Chrome....

12.11.3. Options

Figure 17.283. "Stencil Chrome" options



Chrome saturation, Chrome lightness

Use this option to control how <u>saturation and lightness</u> of the "Chrome" layer are adjusted. Negative values decrease saturation and lightness respectively.

Chrome factor

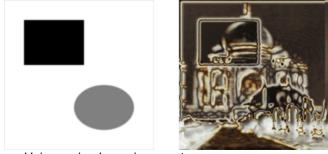
This factor lets you adjust offsets, feather radius, and brush size used to construct the "Chrome" and "Highlight" layer (and the "Drop Shadow" as well).

Change with caution, decreasing this value may make the chrome effect worse. The default factor 0.75 seems to be a good choice.

Environment map

The environment map is an image that is added as some kind of "noise" to the source. If no image is selected here, the source image will be used.

The effect is best to see if you use a simple map with some obvious shapes:



Using a simple environment map

The size of the environment map image doesn't matter, it is scaled to the size of the source image.

Highlight balance

This color is used to modify the <u>color balance</u> of the "Highlight" layer: the amount of red, green, and blue colors is increased according to the corresponding values of the specified option.

Avoid colors with red, green or blue value > 230.

Chrome balance

Same as above, but modifies the color balance of the "Chrome" layer.

Chrome white areas

If checked (this is the default), the source image is used as mask. If unchecked, the inverted source image is used.

12.11.4. How to create the chrome effect

The following section provides a brief and simplified description of how the script (actually this filter is a Script-Fu) creates the chrome effect.

If you apply the filter to your source images and then look at the <u>Layers Dialog</u> of the resulting image, you will see that there are two main layers which make up the chrome effect: the "Chrome" layer and the "Highlight" layer. These layers are created as follows:

1. The script constructs a somewhat simplified and blurred layer from the source image (from the inverted source image if Chrome white areas is unchecked).

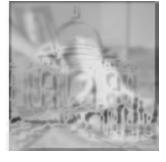


The Chrome factor controls the appearance of this layer.

2. The (scaled) environment map is blurred and merged into the above layer with 50% opacity. (Do you spot the cat in the introducing example?)

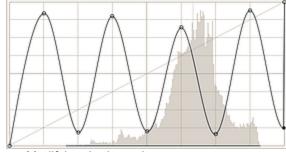






Merging the environment map

3. The brightness (value) of the layer is modified according to a spline-based intensity curve.





Modifying the intensity curve

4. A layer mask is added, initialized with the source image (the "Chrome Stencil"). This is the "Chrome" layer before the final step.

The "Highlight" layer is a copy of the "Chrome" layer where the layer mask is stroked with a white brush.

3/29/25, 9:39 PM 12.11. Stencil Chrome





Chrome and Highlight base

 For both layers the color balance is modified (according to Highlight balance and Chrome balance), increasing the amount of red, green, and blue, with emphasis on highlights.
 Additionally, saturation and lightness of the "Chrome" layer are modified (controlled by Chrome saturation and

Chrome lightness).





Chrome and Highlight layer

Now add a drop shadow and a background layer and you get the Example image for the "Stencil Chrome" filter.



12.10. Stencil Carve







13. Map Filters

3/29/25, 9:39 PM 13. Map Filters

13. Map Filters



Chapter 17. Filters



13. Map Filters

13.1. Introduction

Map filters use an object named *map* to modify an image: you map the image to the object. So, you can create 3D effects by mapping your image to another previously embossed image ("Bumpmap" Filter) or to a sphere ("Map Object" filter). You can also map a part of the image elsewhere into the same image ("Illusion" and "Tile Seamless" filters), bend a text along a curve ("Displace" filter), etc.

This category describes the following filters:

- Section 13.2, "Bump Map"
- Section 13.3, "Displace"
- Section 13.4, "Fractal Trace"
- Section 13.5, "Illusion"
- Section 13.6, "Little Planet"
- Section 13.7, "Panorama Projection"
- Section 13.8, "Recursive Transform"
- Section 13.9, "Paper Tile"
- Section 13.10, "Tile Seamless"
- Section 13.11, "Map Object"
- Section 13.12, "Small Tiles"
- <u>Section 13.13, "Tile"</u>
- Section 13.14, "Warp"



12.11. Stencil Chrome







13.2. Bump Map



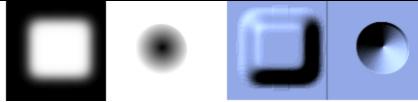
13. Map Filters



13.2. Bump Map

13.2.1. Overview

Figure 17.284. "bump-map" example



On the left, the original image that we want to emboss: a solid blue. In the middle, the bump map: a grayscale image, where black pixels will emboss backwards and white pixels will emboss forwards. On the right, the bump-mapped image. The filter adds a shadow effect.

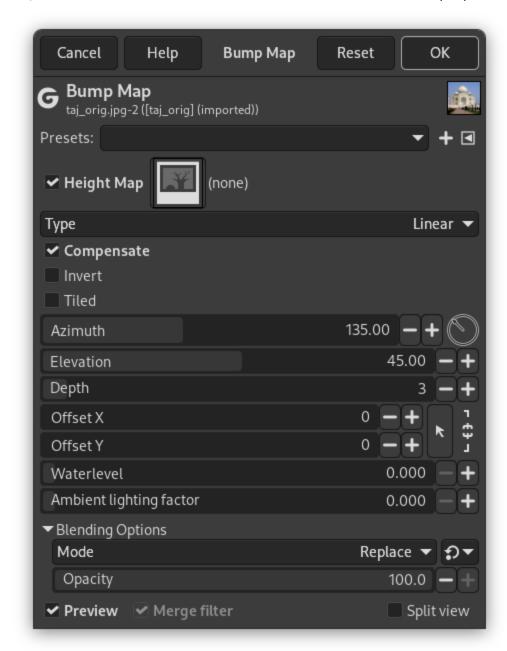
This filter creates a 3D effect by embossing an image (the card) and then mapping it to another image. Bump height depends on pixel luminosity and you can set light direction. See <u>Emboss</u> for more information about embossing. You can bump map any type of image, unlike the Emboss filter.

13.2.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Map \rightarrow Bump Map....

13.2.3. Options

Figure 17.285. "Bump Map" filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

Height Map

Clicking on this button opens a small file browser with two panels. On the left panel, images present on your screen are listed: the active image is selected. On the right panel, you see the layers list of the active image: double click on the layer you want to use as a map for bump-mapping; the file browser is closed and a layer thumbnail appears in the Aux Input button.

The right panel has a Channels tab: TODO

Type

This option allows you to define the method that will be used when creating the map image:

Linear

Bump height is a direct function of luminosity.

Spherical

Bump height is a spherical function of luminosity.

Sinusoidal

Bump height is a sinusoidal function of luminosity.

Compensate

Bump-mapping tends to darken image. You can compensate this darkening by checking this option.

Invert

Bright pixels default to bumps and dark pixels to hollows. You can invert this effect by checking this option.

Tiled

If you check this option, there will be no relief break if you use your image as a pattern for a web page: patterns will be placed side by side without any visible joins.

Azimuth

This is about lighting according to the points of the compass (0 - 360). East (0°) is on the left. Increasing value goes counter-clockwise.

Elevation

That's height from horizon (0.50°), up to zenith (90°).

Depth

With this slider, you can vary bump height and hollow depth. The higher the value, the higher the difference between both. Values vary from 1 to 65.

Offset X. Offset Y

With this slider, you can adjust the map image position compared with the image, horizontally (X) and/or vertically (Y).

Waterlevel

If your image has transparent areas, they will be treated like dark areas and will appear as hollows after bump-mapping. With this slider, you can reduce hollows as if sea level was raising. This hollows will disappear when sea level value reaches 255. If the Invert bump-map option is checked, transparent areas will be treated as bright areas, and then Waterlevel slider will plane bumps down.

Ambient lighting factor

This slider controls the intensity of ambient light. With high values, shadows will fade and relief lessen.

13.2.4. Using Bumpmap filter

We shall emboss an image with a text.

- 1. Open your main image.
- 2. Create the map: here a white text on black background.



The image and the map

- 3. Edit \rightarrow Copy the map. Activate the image and Edit \rightarrow Paste as \rightarrow Paste as Single Layer. Right click on the new layer and select Layers to Image Size to make the layer the same size as the image.
- 4. The map layer being active, apply a Gaussian Blur. Here, the default 1.5 pixels is used.
- 5. Make the map layer invisible and activate the image layer.
- 6. Open the "Bump Map" filter. Click on the Height Map button and double-click on the text layer in the right panel.



Bump Map filter applied. Depth = 3. Ambient lighting factor = 0.326.



13. Map Filters







13.3. Displace

13.3. Displace

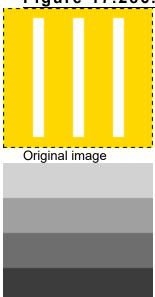




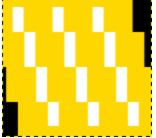
13.3. Displace

13.3.1. Overview

Figure 17.286. Displacement examples



The displacement map has four gray stripes with values of 210, 160, 110, and 60, respectively.



Horizontal displacement coefficient is 30. Vacated pixels are black. The image areas corresponding to light gray (128) were displaced 19 and 8 pixels to the left. The image areas corresponding to dark gray (127) were displaced 4 and 15 pixels to the right.

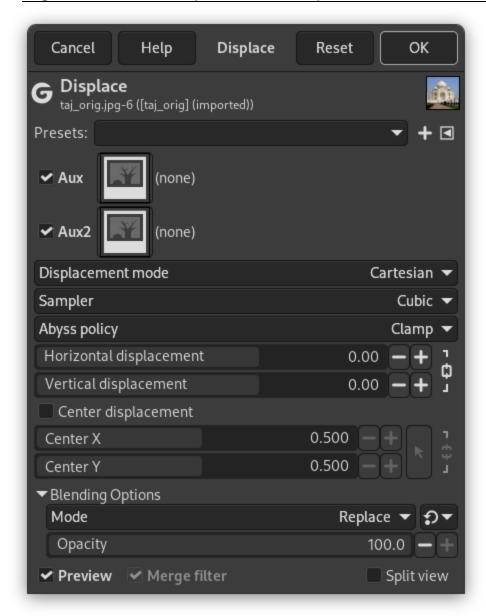
This filter uses a "displace-map" to displace corresponding pixels of the image. This filter displaces the content of the specified drawable (active layer or selection) by the amounts specified in Horizontal and vertical Displacement multiplied by the intensity of the corresponding pixel in the "displace map" drawables. Both Horizontal and Vertical displace maps should be grayscale images and have the same size as the drawable. This filter allows interesting distortion effects.

13.3.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Map \rightarrow Displace....

13.3.3. Options

Figure 17.287. Displace filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

Aux, Aux2

Clicking on a question mark button opens a small file browser with two panels. The left panel shows images present on your screen. The right panel shows the layers of the selected image. Double click on the wanted layer to select the map.

You can select different maps for Horizontal and Vertical displacements.

Displacement Mode

You can choose working in <u>Cartesian</u> coordinates, where pixels are displaced in Horizontal or Vertical direction, or working in <u>Polar</u> coordinates, where the image is pinched and whirled by displacing pixels in radial or tangent direction.

Please see the next sections for details about these options.

Sampler

Interpolation methods are described in <u>Transform tools</u>

Abyss policy

These options allows you to set displacement behavior on active layer or selection edges. They are described in Abyss policy

13.3.3.1. Cartesian Displacement Mode

Figure 17.288. Displace filter options (Cartesian)



Horizontal and vertical displacements are 20 pixels

In both modes, direction and amount of displacement depend on the intensity of the corresponding pixel in the displacement map.

The map, that should be a grayscale image, has 256 gray levels (0-255), the (theoretical) average value is 127.5. The filter displaces image pixels corresponding to pixels with values less than 127.5 (0 to 127) in map to one direction, corresponding to pixels with values from 128 to 255 to the opposite direction.

Horizontal displacement, Vertical displacement

If the respective option is activated, image pixels corresponding to pixels from 0 to 127 will be displaced to the right for Horizontal, downwards for Vertical, image pixels corresponding to pixels from 128 to 255 will be displaced to the left for Horizontal, upwards for Vertical.

What you enter in input boxes, directly or by using arrow-head buttons, is not the actual displacement. It's a

coefficient used in a $\frac{displacement}{displacement} = \frac{(intensity * coefficient)}{(intensity * coefficient)}$ formula, which gives the pixel actual displacement according to the scaled intensity $\frac{[13]}{(intensity * coefficient)}$ of the corresponding pixel in map, modulated by the coefficient you enter. Introducing intensity into formula is important: this allows progressive displacement by using a gradient map.

This value may be positive or negative. A negative displacement is reverse of a positive one. The value varies in limits equal to the double of image dimensions.

When you click on the drop-down list button, a list appears where you can select a displacement map. To be present in this list, an image must respect two conditions. First, this image must be present on your screen when you call filter. Then, this image must have the same dimensions as the original image. Most often, it will be a duplicate original image, which is transformed to gray scale and modified appropriately, with a gradient. It may be possible to use RGB images, but color luminosity is used making result prevision difficult. Map may be different in horizontal and vertical directions.

13.3.3.2. Polar Displacement Mode

Figure 17.289. Displace filter options (Polar)



Pinch

If this option is activated, the radial coordinates (i.e. the distance to the image's midpoint, the "pole") of the pixels will be changed. Image pixels corresponding to map pixels from 0 to 127 will be displaced outwards, image pixels

corresponding to pixels from 128 to 255 will be displaced towards center.

For the values and the displacement map see above ("Horizontal/Vertical displacement").

The displacement is independent from the polar distance, all pixels are displaced by the same amount. So the image will not only be stretched or compressed, but also distorted:

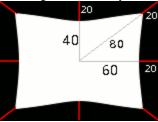


Image distortion by Pinch option

A 160×120 pixels image, plain white displacement map, and displacement coefficient 20.0: this results in a 20 pixels displacement towards center. This is a horizontal reduction in size by 25%, vertical by 33%, and diagonal by 20%, so the image will be distorted.

Whirl

If this option is activated, the angular coordinates of the image pixels will be "displaced" by a map pixel dependent amount. For a plain displacement map, the image will be rotated, otherwise it will be whirled. Image pixels corresponding to pixels from 0 to 127 in the map will be displaced counterclockwise, image pixels corresponding to pixels from 128 to 255 will be displaced clockwise.

For the values and the displacement map see above.



Note

For a plain, non neutral map, if displace mode "Polar" is enabled, this filter works like Whirl and Pinch.

13.3.3.3. Center displacement

This option is used with Polar displacement: you can fix the displacement center.

13.3.4. Using gradient to bend a text

Follow following steps:

- 1. Start with opening your image.
- Duplicate this image. Activate this duplicate and make it grayscale (Image → Mode → Grayscale). Fill it with the wanted gradient. This image will be your *Displacement map*, with the dimensions of original image.



3. Activate original image. Create a *Text Layer* with your text. Set layer to image size: right-click on the layer in Layers dialog and, in the pop-up menu, click on "Layers to image size". Note that letters in text layer lie on a transparent background; now this filter doesn't displace transparent pixels. Only letters will be displaced.



4. Activate the text layer. Open the Displace filter window. Set parameters, particularly the displacement coefficient, according to the result in Preview. Click OK.



This method also applies to standard layers:





Tip

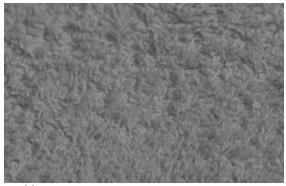
To get the wanted gradient, first draw a black to white gradient. Then use the <u>Curves</u> tool to modify the gradient curve.

13.3.5. Using Displace filter to fit a text to an uneven surface

Figure 17.290. Images example



Texture and Text



Мар

Follow following steps:

- 1. Open the image with an uneven texture.
- 2. **Create the map**: Duplicate the image. Then select Colors → Desaturate → Desaturate....
- 3. **Create the text** in Texture image. Move it if necessary. Make this text layer the same size as the image via <u>Layers to Image Size</u>.
- 4. Open the "Displace" filter. Click on the Aux button and double-click on the map image thumbnail in the left panel.



Displace filter applied.

13.3.6. Displacement Calculation

The following section will show you how to calculate the amount of displacement, if you are interested in these details. If you don't want to know it, you can safely omit this section.

The overview example showed the horizontal displacement using a coefficient of 30.0: 19, 8, 4, or 15 pixels, depending on the gray level of the displacement map's color.

Why just these amounts? That's easy:

$$30.0 * \frac{I - 127.5}{127.5} = D$$

$$30.0 * \frac{210 - 127.5}{127.5} = 19$$

$$30.0 * \frac{160 - 127.5}{127.5} = 8$$

$$30.0 * \frac{110 - 127.5}{127.5} = -4$$

$$30.0 * \frac{60 - 127.5}{127.5} = -15$$

If you check these equations, you will notice that the values they give are not exactly the results we retained in the example (using non-integers, that's not surprising). So, were the results rounded to the nearest integer and then the pixels were displaced by a whole-numbered amount? No. Every pixel is displaced exactly by the calculated amount; a "displacement by a fractional amount" is realized by interpolation. A closer look at the example image will show it:

Figure 17.291. A closer look at the displacement example



A small area zoomed in by 800 percent.

The displacement causes small (one pixel wide) areas of intermediate colors at the edges of plain color areas. E.g., the black area (zoomed in image) is caused by a displacement of -4.12, so the intermediate color is 12% black and 88% gold.

So if you select a displacement coefficient of 30.01 instead of 30.00, you will indeed get a different image, although you won't see the difference, of course.

[13] Scaled intensity = (intensity - 127.5) / 127.5; see Section 13.3.6, "Displacement Calculation".



1



13.2. Bump Map



13.4. Fractal Trace

3/29/25, 9:40 PM 13.4. Fractal Trace

13.4. Fractal Trace

13. Map Filters



13.4. Fractal Trace

13.4.1. Overview

Figure 17.292. Fractal Trace



Original image



Filter "Fractal Trace" applied

This filter transforms the image with the Mandelbrot fractal: it maps the image to the fractal.

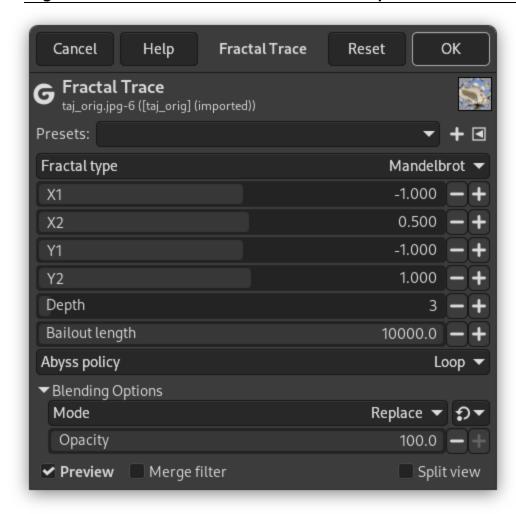
13.4.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Map \rightarrow Fractal trace....

3/29/25, 9:40 PM 13.4. Fractal Trace

13.4.3. Options

Figure 17.293. "Fractal trace" filter options



Options

Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

Fractal type

You choose between "Mandelbrot" and "Julia".

X1, X2, Y1, Y2, Depth

These parameters are similar to Left, Right, Top, Bottom and Iterations parameters of the <u>Fractal Explorer</u> filter. They allow you to vary fractal spreading and detail depth.

JX, JY

Julia seed X and Y value positions. Only shown when fractal type is Julia.

Bailout length

Abyss policy

Mapping image to fractal may reveal empty areas. These options allows you to set displacement behavior on active layer or selection edges. They are described in Abyss-policy

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13.3. Displace

1

13.5. Illusion

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13.5. Illusion





13.5. Illusion

13.5.1. Overview

Figure 17.294. Illusion



Original image



Filter "Illusion" applied

With this filter, your image (active layer or selection) looks like a kaleidoscope. This filter duplicates your image in many copies, more or less dimmed and split, and puts them around the center of the image.

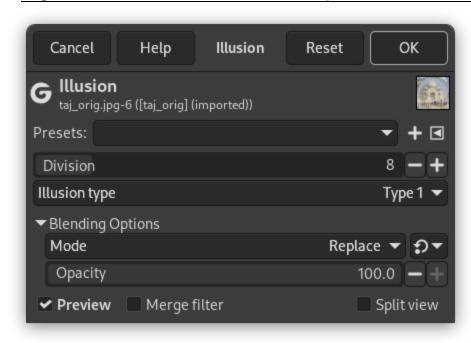
13.5.2. Activating the Filter

3/29/25, 9:40 PM 13.5. Illusion

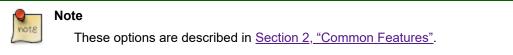
This filter is found in the main menu under Filters \rightarrow Map \rightarrow Illusion....

13.5.3. Options

Figure 17.295. "Illusion" filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Division

That's the number of copies you want to apply to image. This value varies from -32 to 64. Negative values invert kaleidoscope rotation.

Illusion type

You have two arrangement types for copies in image:

Figure 17.296. From left to right: original image, Type 1, Type 2, with Divisions=4



3/29/25, 9:40 PM 13.5. Illusion





13.4. Fractal Trace







13.6. Little Planet

13.6. Little Planet



13. Map Filters



13.6. Little Planet

13.6.1. Overview

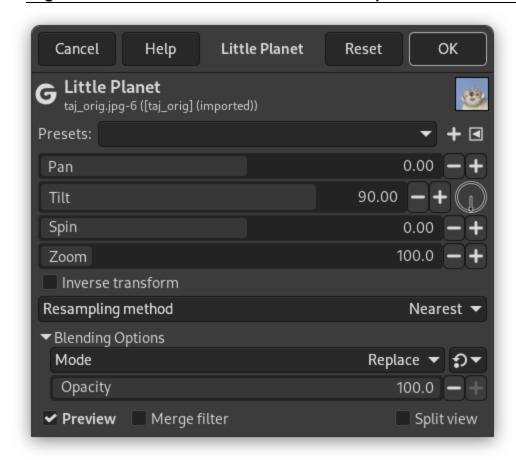
This filter converts a panorama into a small planet. All images don't fit this filter. The ideal image is a 360° x 180° image, also known as equirectangular image. We will see that it is possible to use normal images also.

13.6.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Map \rightarrow Little Planet....

13.6.3. Options

Figure 17.297. "Little Planet" filter options



Options



Note

These options are described in Section 2, "Common Features".

Pan

Horizontal camera panning. If "Inverse transform" option is checked, the "pan" option moves line of sight horizontally. Else, it works as "Spin" option.

Tilt

Vertical camera panning. Moves line of sight upwards/downwards.

Spin

Spin angle around camera axis. Rotates planet around line of sight.

Zoom

Zoom level. Zooms planet in/out.

Inverse transform

Do the inverse mapping; useful for touching up zenith, nadir or other parts of panorama.

Resampling method

Interpolation methods are described in Interpolation

"Cubic" may give better result.

13.6.4. Using Little Planet filter with an equirectangular image



Tip

You can find free equirectangular images at https://commons.wikimedia.org/wiki/Category:360 panoramas with equirectangular projection.



Ettling_Isar_panorama.jpg by © Simon Waldherr under CC by-sa 4.0

GIMP opened this 16000×8000 pixels original image in a 1000×500 px frame at zoom 6.25. This is a screenshot scaled to 600×300 px. Note the empty sky, the horizon perfectly horizontal, the vanishing perspective.



Filter applied

13.6.5. Using Little Planet filter with a normal image

Your panorama rarely satisfies conditions necessary for this filter, especially if you cut it off a larger image. The Little Planet filter brings left and right image sides together, and creates an unwanted sharp limit if sides are different. An uneven horizon gives an irregular circle. A blue empty sky occupying the upper half of the image and a horizontal horizon are perfect. Usually, you will have to prepare your panorama before using filter.

Figure 17.298. Original Images



Original panorama



Filter applied directly with default options

- 1. Wipe sky: with Color Picker, darker blue to toolbox foreground and lighter blue to toolbox background. Rectangular selection of sky including a small part of horizon. In the selection, draw a Gradient from top to bottom.
- 2. Select the left border of the image.
- 3. Copy the selection and Paste it as New layer.
- 4. **Q** shortcut to open the Align tool.
- 5. Click on new layer (superimposed on selection area): new layer limits appear. Align new layer to image right side.
- 6. Select>None.
- 7. Flip new layer horizontally.



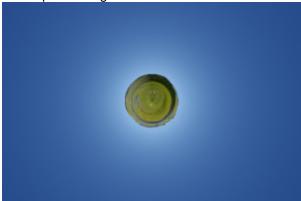
New layer aligned to image right side and flipped: left and right image sides are now the same. Sky wiped out. Horizon horizontalized.

- 8. Add a black Layer Mask to new layer.
- 9. Apply a black-to-white gradient to layer mask.
- 10. Apply Little planet filter.

Figure 17.299. Results



Prepared image



Report a bug in GIMP Report a documentation error

Filter applied



13.5. Illusion







13.7. Panorama Projection

13.7. Panorama Projection





13.7. Panorama Projection

13.7.1. Overview

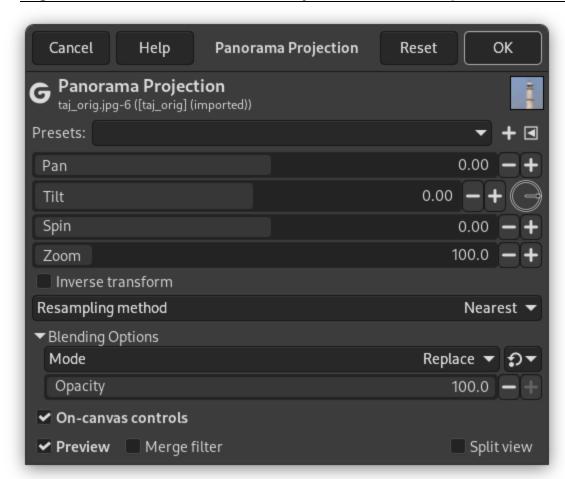
This filter converts a 360° x 180° image, also known as equirectangular image, into a panorama.

13.7.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Map \rightarrow Panorama Projection....

13.7.3. Options

Figure 17.300. "Panorama Projection" filter options



These options are the same as <u>Section 13.6, "Little Planet"</u> options.

13.7.4. Key Modifiers

Click and drag to pan.

Shift + Click and drag to rotate.

Ctrl + Click and drag to pan with a constrained axis.

Alt + Click and drag to zoom.

13.7.5. Using Panorama Projection filter



Tip

You can find free equirectangular images at

https://commons.wikimedia.org/wiki/Category:360° panoramas_with_equirectangular_projection.

Of course, you can get only a part of the original image in your panorama. The first thing you have to do is creating a new image with the size of your future panorama. Then, open the original image.



Parc_de_Belleville,_Paris_June_2007.jpg by Alexandre Duret-Lutz under CC by-sa 4.0

GIMP opened this 4000×2000 pixels original image in a 1000×500 px frame at zoom 12.5. This is a screenshot scaled to 400×200 px.

Open the Panorama Projection filter. Only the central part of the image is visible. Pan across the image to find your panorama using the Pan option or click and dragging. You can zoom in to have a wider view.

Figure 17.301. "Panorama Projection" filter applied



Pan = 0.00



Pan = 66.00



13.6. Little Planet







13.8. Recursive Transform

13.8. Recursive Transform

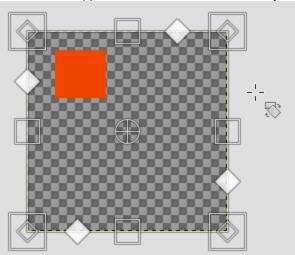




13.8. Recursive Transform

13.8.1. Overview

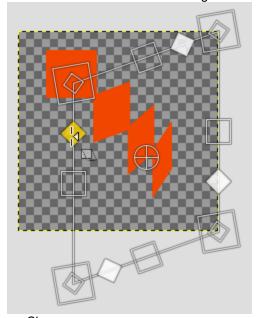
This filter applies a transformation recursively.



As in Unified Transform tool, this filter display a frame around the image with several kind of handles:



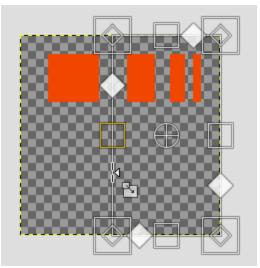
Diamonds for shearing



Shear



Squares for scaling horizontally or vertically.

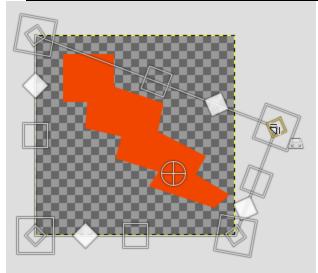


Scale horizontally

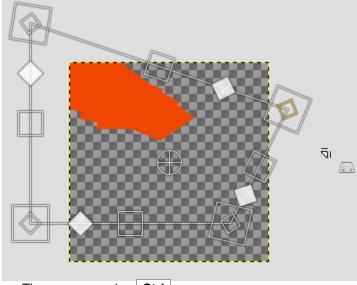


Small diamonds for changing perspective, in large squares for Scaling in all directions.

Figure 17.302. Changing perspective

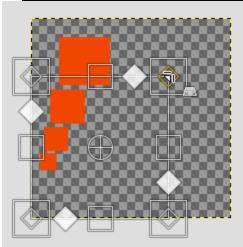


Change perspective

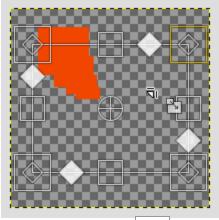


The same pressing Ctrl

Figure 17.303. Scaling in all directions



Scaling



The same pressing Ctrl

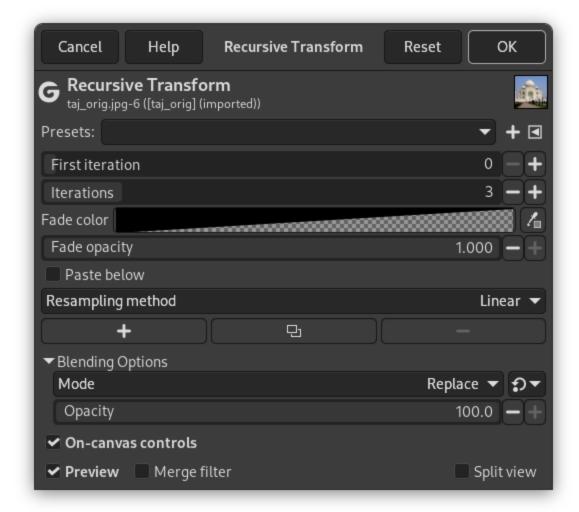
and outside the frame, the mouse pointer comes with a rotation icon: click-and-drag to rotate around the pivot. This pivot is, by default, at the center of the image: click-and-drag to move it.

13.8.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Map \rightarrow Recursive Transform....

13.8.3. Options

Figure 17.304. "Recursive Transform" filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



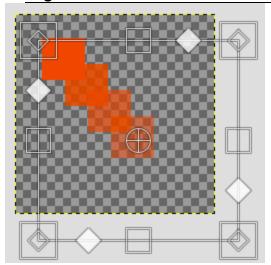
Note

These options are described in Section 2, "Common Features".

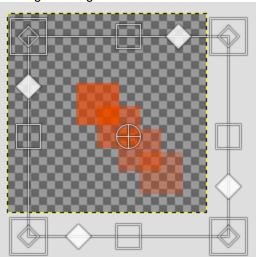
First iteration

This option is used when the number of iterations has been set. Then the transformation starts at the position determined by this option.

Figure 17.305. "Recursive Transform" filter options



Original image. Iterations = 3. Fade = 0.797



First Iteration = 2

Iterations

Number of iterations.

Fade color

The color that will be used to fade. Default is transparency. You can change this color selecting a new color by clicking in the color swatch or using the color picker on the right.

Fade opacity

Amount by which to scale opacity of each iterated image.

Paste below

Paste iterated images below each other.

Resampling method

Interpolation methods are described in Interpolation

Three buttons

To add, duplicate or remove transform.

13.8.4. Using Recursive Transform Filter

You can use this filter to create a Droste effect, 3D effects, trees.









13.7. Panorama Projection



13.9. Paper Tile

3/29/25, 9:41 PM 13.9. Paper Tile

13.9. Paper Tile



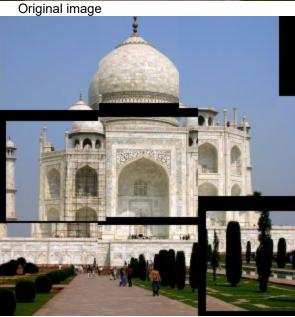


13.9. Paper Tile

13.9.1. Overview

Figure 17.306. "Papertile" filter example.





Filter "Papertile" applied

This filter cuts the image (active layer or selection) into several pieces, with square form, and then slides them so that they, more or less, overlap or move apart. They can go out image borders a little.

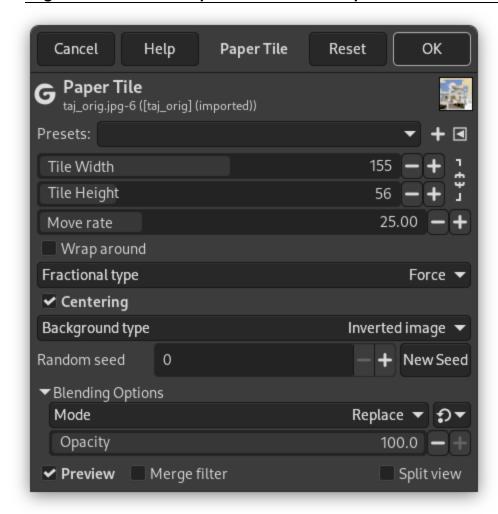
13.9.2. Activating the Filter

3/29/25, 9:41 PM 13.9. Paper Tile

This filter is found in the main menu under Filters \rightarrow Map \rightarrow Paper Tile....

13.9.3. Options

Figure 17.307. "Paper Tile" filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

Tile Width, Tile Height

Filter starts cutting image before it displaces pieces; so, piece size and number of pieces in horizontal (Width) and vertical (Height) directions must be convenient to image size.

When these options are linked, tiles are square.

Move rate

This is the maximum displacement percentage against the side size of squares.

Wrap around

As tiles move, some can go out image borders. If this option is checked, what goes out on one side goes in on the opposite side.

Fractional type

Because of image cutting, original pixels can persist. There are three ways treating them:

Force

Remaining pixels will be cut also.

Ignore

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Background Type option is not taken into account and remaining pixels are kept.

Background

Remaining pixels will be replaced with the background type defined in the following section.

Centering

If this option is checked, tiles will rather be gathered together in the center of the image.

Background Type

You can select the background type which will be used, if the Background radio-button is checked, among six options:

Inverted image

Background colors will be inverted (255-value in every color channel).

Transparent

Background will be transparent.

Image

Background colors will be unchanged. The original image is the background.

Color

Remaining pixels will be replaced by the color you can select. Default is the Foreground color of toolbox. You can choose another color using the color button or the color picker.

Random seed. New Seed

This option controls the randomness of the filter. The Random seed box lets you manually enter a seed for the randomization algorithm used. You can also generate a random seed by pressing the New Seed button. If the same random seed is used in the same situation, the filter produces exactly the same results. A different random seed produces different results.







13.8. Recursive Transform



13.10. Tile Seamless

3/29/25, 9:41 PM 13.10. Tile Seamless

13.10. Tile Seamless





13.10. Tile Seamless

13.10.1. Overview

Figure 17.308. An example of Tile Seamless.



Original



Tile Seamless applied

This filter modifies the image for tiling by creating seamless edges. Such an image can be used as a pattern for a web-page. This filter has no option, and result may need correction.

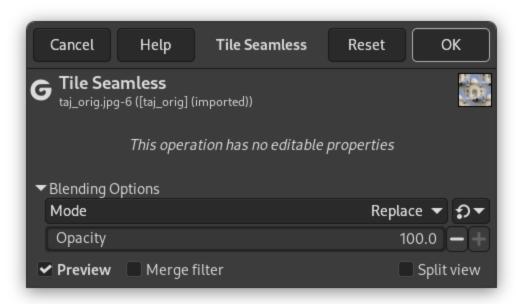
13.10.2. Activation

3/29/25, 9:41 PM 13.10. Tile Seamless

You can find this filter through Filters \rightarrow Map \rightarrow Tile Seamless...

13.10.3. Options

Figure 17.309. "Tile Seamless" filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view





13.11. Map Object

13. Map Filters





13.11. Map Object

13.11.1. Overview

Figure 17.310. The "Map Object" filter applied to a photograph



Original



"Map Object" applied

This filter maps a picture to an object (plane, sphere, box or cylinder).

13.11.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Map \rightarrow Map Object....

13.11.3. Options

13.11.3.1. Preview

This preview has several possibilities:

Preview!

Preview is automatic for some options but you will have to press this button to update Preview after modifying many other parameters.

When mouse pointer is on Preview and the Light tab is selected, it takes the form of a small hand to grab the *blue point* which marks light source origin and to displace it. This blue point may not be visible if light source has negative X and Y settings in the Light tab.

Zoom out Zoom in

Zoom buttons allow you to enlarge or to reduce image in Preview. Their action is limited, but may be useful in case of a large image.

Show wireframe

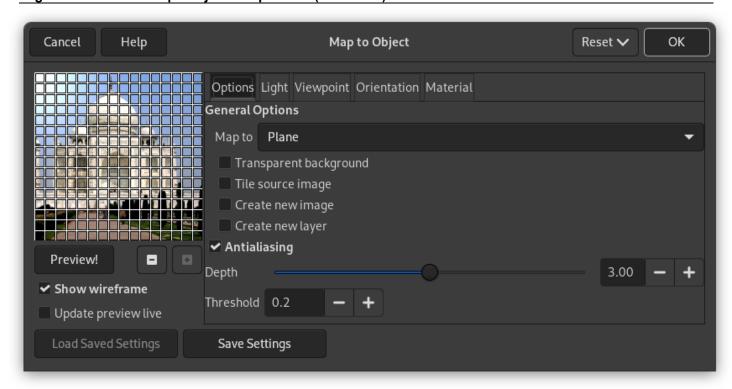
Puts a grid over the preview to make displacements and rotations more easy. Works well on a plan.

Update preview live

To have preview working as usual.

13.11.3.2. General Options

Figure 17.311. "Map Object" options (General)



Map to

This drop-down list allows you to select the object the image will be mapped on. It can be a Plane, a Sphere, a Box or a Cylinder.

Transparent background

This option makes image transparent around the object. If not set, the background is filled with the current background color.

Tile source image

When moving Plane object and displacing it with Orientation tab options, a part of the image turns empty. By checking the Tile source image, source image copies will fill this empty space in. This option seems not to work with the other objects.



Create new image

When this option is checked, a new image is created with the result of filter application, so preserving the original image.

Antialiasing

Check this option to conceal this unpleasant aliasing effect on borders. When checked, this option lets appear two settings:

Depth

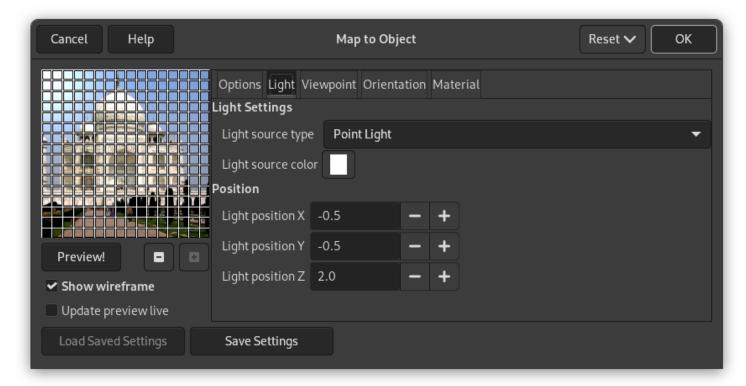
Defines antialiasing quality, to the detriment of execution speed.

Threshold

Defines antialiasing limits. Antialiasing stops when value difference between pixels becomes lower than this set value.

13.11.3.3. Light

Figure 17.312. "Map Object" options (Light)



Light Settings

Light source type

In this drop-down list, you can select among Point light, Directional light and No light.

Light source color

Press this button to open the Color Selector dialog.

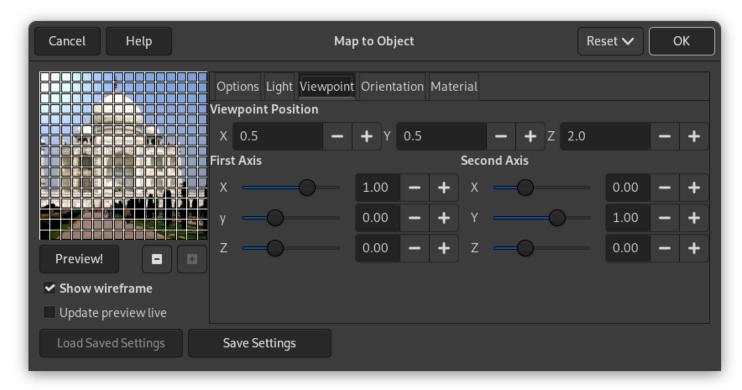
Position

If "Point light" is selected, you can control there light source Position (the blue point), according to X, Y and Z coordinates.

If "Directional light" is selected, these X, Y and Z parameters control the "Direction vector" (effect is not evident).

13.11.3.4. Viewpoint

Figure 17.313. "Map Object" options (Viewpoint)



Viewpoint Position

When Light Source Type is set to "Point Light", changing the X, Y, and Z values moves the "viewer" closer to or further from the object in those directions.

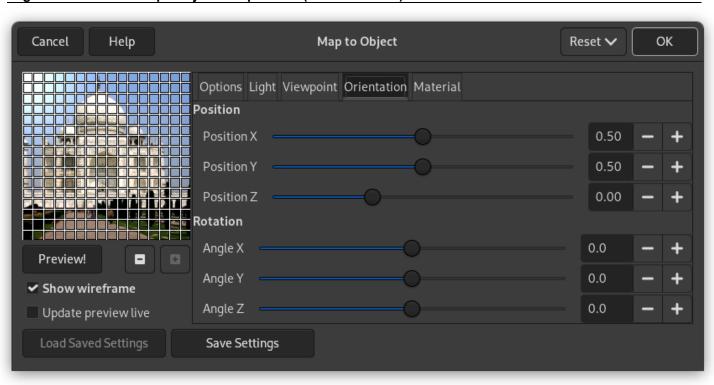
Note that this will not visually affect images set to "Plane" in the Map To field.

First Axis, Second Axis

When Map To is set to "Plane", changing the X, Y, and Z values simulates the effect of tilting the plane on the Y and Z axes. This impacts how the Material tab settings affect the render.

13.11.3.5. Orientation

Figure 17.314. "Map Object" options (Orientation)



Position

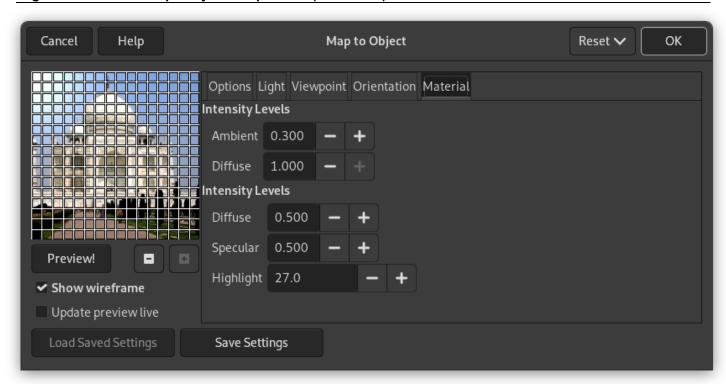
These three sliders and their input boxes allows you to vary object position in image, according to the X, Y, Z coordinates of the object upper left corner.

Rotation

These three sliders make the object rotate around X, Y, Z axes respectively.

13.11.3.6. Material

Figure 17.315. "Map Object" options (Material)



Intensity Levels

Ambient

Amount of color to show where no light falls directly.

Diffuse

Intensity of original color when lit by a light source.

Reflectivity

Diffuse

Higher values make object reflect more light (looks brighter).

Specular

Controls how intense the highlights will be.

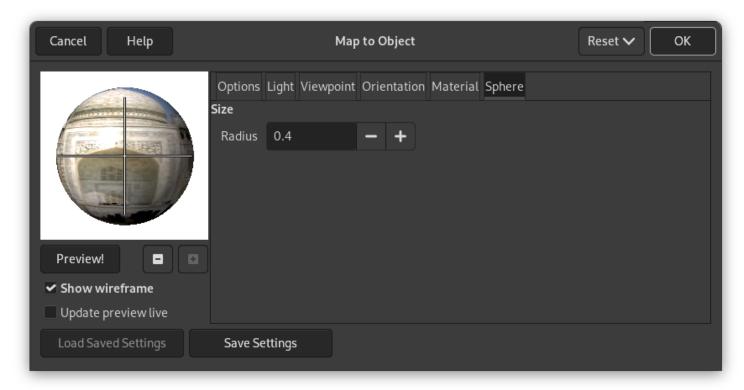
Highlight

Higher values make the highlights more focused.

13.11.3.7. Sphere

This tab appears only when you select the Sphere object.

Figure 17.316. "Map Object" options (Sphere)



Size

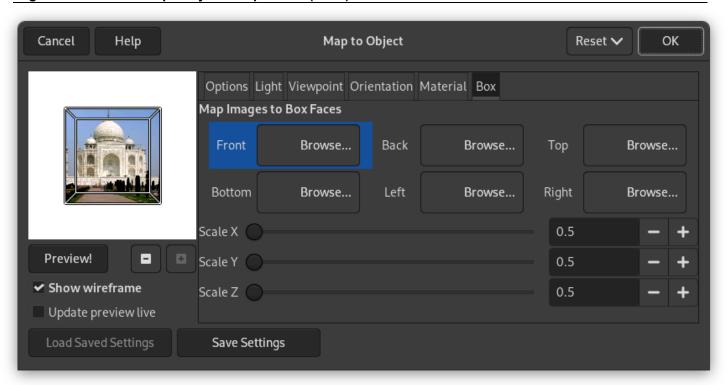
Radius

The radius ratio in comparison to the image size.

13.11.3.8. Box

This tab appears only when you select the Box object.

Figure 17.317. "Map Object" options (Box)



Map Images to Box Faces

Select an image for every face of the box. These images must be present on your screen when you call the Map Object filter.

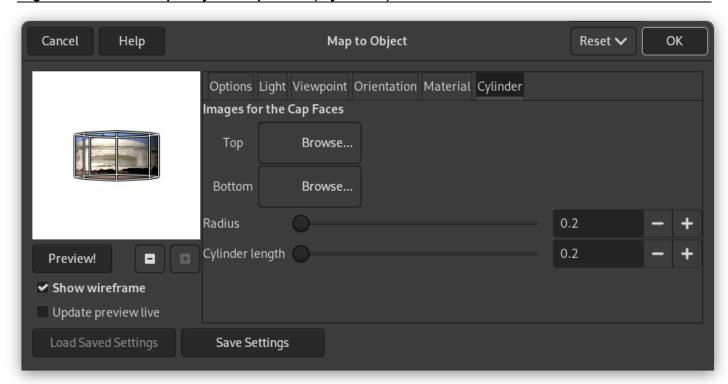
Scale

These X, Y, Z sliders allow you to change the size of every X, Y, Z dimension of the box.

13.11.3.9. Cylinder

This tab appears only when you select the Cylinder object.

Figure 17.318. "Map Object" options (Cylinder)



Images for the Cap Faces

Select an image for every face of the cylinder. Images must be present on your screen when you call the Map Object filter.

Size

Radius

This slider and its input boxes let you control the Cylinder diameter. Unfortunately, this setting works on the image mapped onto the cylinder and resamples this image to adapt it to the new cylinder size. It would be better to have the possibility of setting size cylinder before mapping so that we could map a whole image.

Length

Controls cylinder length.

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3/29/25, 9:42 PM 13.12. Small Tiles

13.12. Small Tiles

13. Map Filters



13.12. Small Tiles

13.12.1. Overview

Figure 17.319. Example for the "Small Tiles" filter



Original image



"Small Tiles" applied

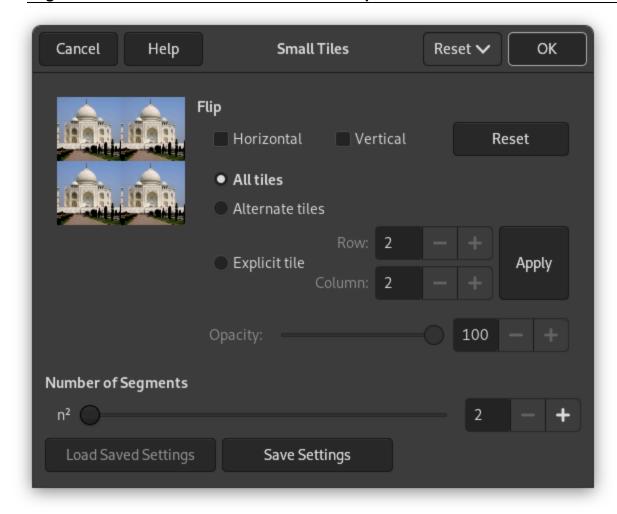
This filter reduces the image (active layer or selection) and displays it in many copies inside the original image.

13.12.2. Activating the filter

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13.12.3. Options

Figure 17.320. "Small Tiles" filter options



Flip

You can flip tiles according to the Horizontal or/and Vertical axis by checking the corresponding option(s). You can also decide which tiles will be flipped:

All tiles

All tiles will be flipped.

Alternate tiles

Only odd tiles will be flipped.

Explicit tile

You can define a particular tile using both Row and Column input boxes. This tile will be marked with a box in Preview. Press Apply to mark this explicit tile. Repeat this procedure to mark more than one tile.

Opacity

With this slider and its input box, you can set the opacity of the resulting image. This option is valid only if your image has an Alpha channel.

Number of Segments

 n^2 means "the image into n to the power of two tiles", where "n" is the number you set with the slider or its input box. n = 3 will make nine tiles in the image.







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13.11. Map Object



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13.13. Tile

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13.13. Tile





13.13. Tile

13.13.1. Overview

Figure 17.321. The same image, before and after applying Tile filter



Original image



(We have reduced image size intentionally)

This filter makes several copies of the original image, in a same or reduced size, into a bigger (new) image.

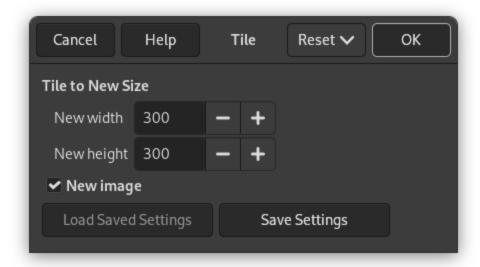
13.13.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Map \rightarrow Tile....

13.13.3. Options

Figure 17.322. "Tile" filter options

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Tile to New Size

New width, New height

Input boxes and their arrow-heads allow you to enter the dimensions for the new image.

The new image must be bigger than the original one. Else, you will get an image sample only. Choose sizes which are multiple of original sizes if you don't want to have truncated tiles.

New image

Keep this option checked to avoid modifying your original image.



3/29/25, 9:42 PM 13.14. Warp

13.14. Warp

13. Map Filters

13.14. Warp

13.14.1. Overview

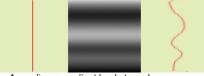
This filter displaces pixels of active layer or selection according to the gray levels of a *Displacement map*. Pixels are displaced according to the gradient slope in the displacement map. Pixels corresponding to solid areas are not displaced; the higher the slope, the higher the displacement.

Figure 17.323. From left to right: original image, displacement map, displaced image



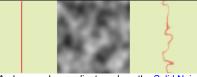
Solid areas of displacement map lead to no displacement. Abrupt transitions give an important displacement. A linear gradient gives a regular displacement. Displacement direction is perpendicular to gradient direction (angle = 90°).

Figure 17.324. With a non-linear gradient



A non-linear gradient leads to curls.

Figure 17.325. With a complex gradient:



And a complex gradient, such as the Solid Noise filter can create, gives a swirl effect.

This filter offers the possibility of masking a part of the image to protect it against filter action.

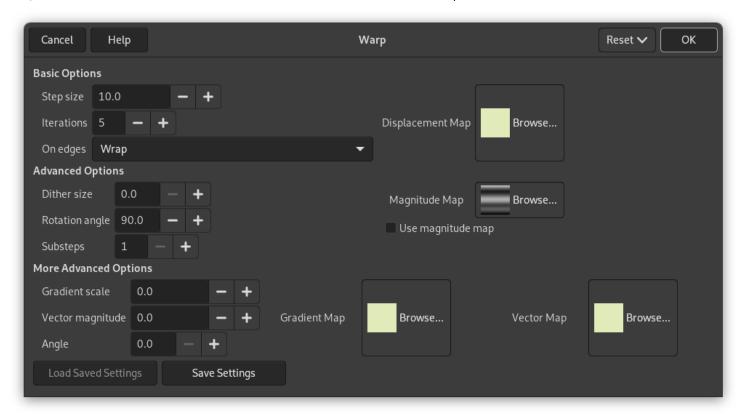
13.14.2. Activating the filter

This filter is found in the main menu under Filters \rightarrow Map \rightarrow Warp.... This filter has no Preview.

13.14.3. Options

Figure 17.326. Warp filter options

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Basic Options

Step size

"Step" is displacement distance for every filter iteration. A 10 value is necessary to get a one pixel displacement. This value can be negative to invert displacement direction.

Iterations

The number of repetitions of effect when applying filter.

On edges

Because of displacement, a part of pixels are driven over the borders of layer or selection, and, on the opposite side, pixels places are emptying. The four following options allow you to fix this issue:

Wrap

What goes out on one side is going into the opposite side (this is the default).

Smear

Emptying places are filled with a spreading of the neighboring image line.

Black

Emptying places are filled with black color.

Foreground color

Emptying places are filled with the Foreground color of the color area in Toolbox.

Displacement map

To be listed in this file picker, the displacement map, which should be a grayscale image, must be present on your screen when you call this filter and must have the same size as the original image.

Advanced Options

Dither size

Once all pixels are displaced, this option scatters them randomly, giving grain to the image. The higher this value (0.00-100.00), the thinner the grain.

Figure 17.327. With a 3.00 dither size:



Rotation angle

This option sets the displacement angle of pixels according to the slope direction of the gradient. Previous examples have been created with a vertical gradient and a 90° angle: so, pixels were displaced horizontally and nothing went out of the image borders. Here is an example with a 10° angle and 6 iterations:

Figure 17.328. With a 10° angle and 6 iterations:

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Displacement is made according to a 10° angle against vertical. Pixels going out the lower border on every iteration are going in through the upper border (Wrap option checked), giving a dotted line.

Substeps

If you specify a value > 1, the displacement vector is computed in several substeps, giving you a finer control to the displace process.

Magnitude map

In addition to displacement map, you can add a Magnitude map. This map should also be a grayscale image, with the same size as the source image and which must be present on your screen when you call the filter. This map gives more or less strength to the filter on some parts of the image, according to the gray levels of this magnitude map. Image areas corresponding to white parts of this map will undergo all the strength of the filter. Image areas corresponding to black parts of the map will be spared by the filter. Intermediate gray levels will lessen the filter action on corresponding areas of the image. Use magnitude map must be checked for that.

Figure 17.329. Magnitude Map example:



From left to right: original image, displacement map, magnitude map, after applying "Warp" filter. You can see that the black areas of the magnitude map prevent the filter from taking action.

More Advanced Options

These extra options let you add two new maps, a gradient map and/or a vector map.



Note

To test these options alone, you must use a map with a solid color for all the other maps.

Gradient scale

Using a gradient map, (this map should also be a grayscale image), the displacement of pixels depends on the direction of grayscale transitions. The Gradient scale option lets you set how much the grayscale variations will influence the displacement of pixels. On every iteration, the filter works on the whole image, not only on the red object: this explains blurredness.

Figure 17.330. Gradient scale example



From left to right: original image, Gradient map, filter applied.

In the example above, "Warp" filter is applied with a gradient map (Gradient scale = 10.0). The gradient is oblique, from top left to right bottom. The part of the image corresponding to the gradient is moved obliquely, 90° rotated (Rotation angle 90° in Advanced Options).

Vector magnitude

With this map, the displacement depends on the angle you set in the Angle text box. 0° is upwards. Angles go counter-clockwise. The vector control map determines by how many pixels the image will move on every iteration.

Figure 17.331. Vector magnitude example



From left to right: original image, displacement map, filter applied.

In the above example, "Warp" filter is applied with a Vector magnitude. Gradient is vertical, from top to bottom. Vector angle is 45°. The image is moved obliquely, 45° to the top left corner. The image is blurred because every iteration works on the whole image, and not only on the red bar.

Angle

Angle for fixed vector map (see above).







14. Rendering Filters

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14. Rendering Filters



Chapter 17. Filters



14. Rendering Filters

14.1. Introduction

Most GIMP filters work on a layer by transforming its content, but the filters in the "Render" group are a bit different. They create patterns from scratch, in most cases obliterating anything that was previously in the layer. Some create random or noisy patterns, others regular of fractal patterns, and one (Gfig) is a general-purpose (but rather limited) vector graphics tool.

This category describes the following filters:

- Section 14.2, "Flame"
- Section 14.3, "Fractal Explorer"
- Section 14.4, "IFS Fractal"
- Section 14.5, "Cell Noise"
- Section 14.6, "Perlin Noise"
- Section 14.7, "Plasma"
- Section 14.8, "Simplex Noise"
- Section 14.9, "Solid Noise"
- Section 14.10, "Difference Clouds"
- Section 14.11, "Bayer Matrix"
- Section 14.12, "Checkerboard"
- Section 14.13, "Diffraction Patterns"
- Section 14.14, "Grid"
- Section 14.15, "Linear Sinusoid"
- Section 14.16, "Maze"
- Section 14.17, "Sinus"
- Section 14.18, "Spiral"
 Section 14.19, "Checkerboard (legacy)"
- Section 14.20, "CML Explorer"
- Section 14.21, "Grid (legacy)"
- Section 14.22, "Jigsaw"
- Section 14.23, "Qbist"
- Section 14.24, "Circuit"
- Section 14.25, "Gfig"
- Section 14.26, "Lava"
- Section 14.27, "Line Nova"
- Section 14.28, "Sphere Designer"
- Section 14.29, "Spyrogimp"



13.14. Warp





14.2. Flame

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14.2. Flame

14. Rendering Filters



14.2. Flame

14.2.1. Overview

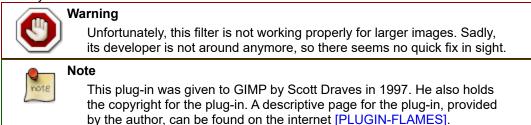
Figure 17.332. Example of a rendered Flame





Filter "Flame" applied

With the Flame filter, you can create stunning, randomly generated fractal patterns. You can't control the fractals as you can with the IFS Fractal filter, but you can steer the random generator in a certain direction, and choose from variations of a theme you like.

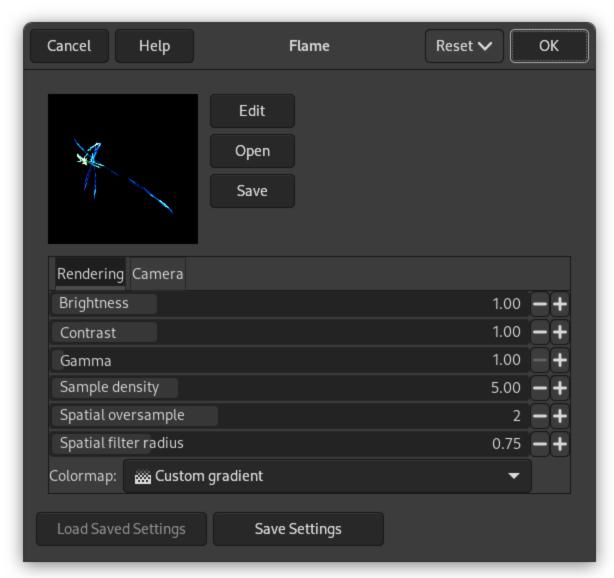


14.2.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Render \rightarrow Fractals \rightarrow Flame....

14.2.3. Options

Figure 17.333. "Flame" filter options

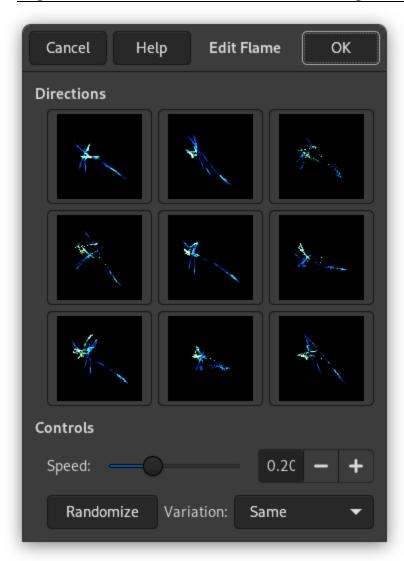


In the main dialog, you can set Rendering and Camera parameters. The first three parameters in the Render display are Brightness, Contrast and Gamma. The result of these options is visible in the Preview window. However, it's generally better to stick to the default values, and correct the rendered image later with tools in the Colors menu. The other three parameters affect the rendering process and don't show in the preview window. Sample Density, which controls the resolution of the rendered pattern, is the most important of these. The Camera parameters allow you to zoom and offset the flame pattern, until you're happy with what you see in the preview. Flame also offers the possibility to store and load your favorite patterns.

Edit

Pressing this button brings up the Edit dialog:

Figure 17.334. The Edit Flame dialog



The dialog shows nine different windows. The pattern displayed in the center is the current pattern, and the eight windows surrounding it are random variations of that pattern. Clicking on the central image creates eight new variations, which can be adjusted with the Speed control. You select a variation by clicking on it, and it instantly replaces the image in the middle. To pick a certain character or theme for the variations, you can choose from nine different themes in the Variations menu. You can also use Randomize, which replaces the current pattern with a new random pattern.

Open

This button brings up a file selector that allows you to open a previously saved Flame settings file.

Save

This button brings up a file save dialog that allows you to save the current settings for the plug-in, so that you can recreate them later.

Rendering

Brightness

Controls the brightness of the flame object.

Contrast

Controls the contrast between brighter and dimmer parts of the flame.

Gamma

Sets a gamma correction for parts with intermediate brightness.

Sample density

Controls the resolution of the rendered pattern. This does not have any effect on the preview. A high sample density results in soft and smooth rendering (like a spider's web), whereas low density rendering resembles spray or particle clouds.

Spatial oversample

What does this do?

Spatial filter radius

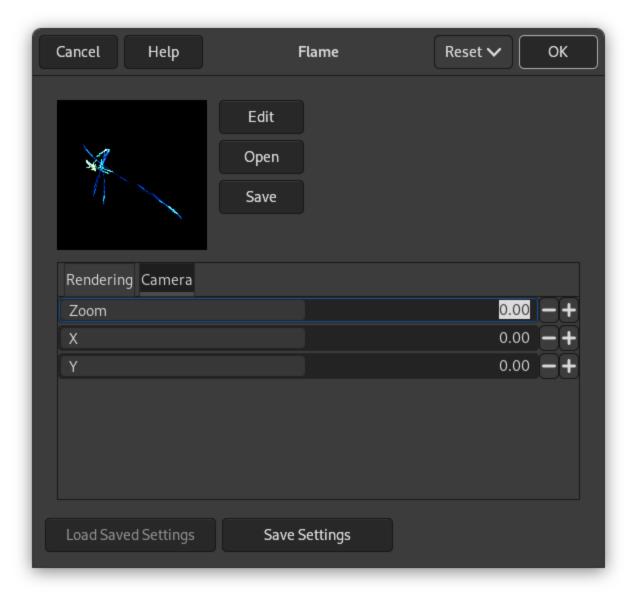
What does this do?

Colormap

This menu gives you several options to set the color blend in the flame pattern:

- The current gradient as shown in the Toolbox.
- A number of preset colormaps.
- The colors from images that are presently open in GIMP.

Camera



Zoom

Allows you to zoom the flame in or out.

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X, Y

Allows you to move the flame around in the image area.



https://docs.gimp.org/3.0/en/plug-in-flame.html

14.3. Fractal Explorer



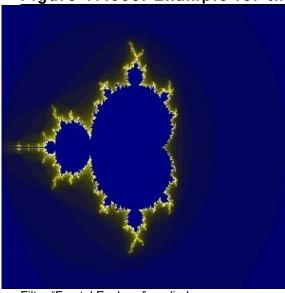
14. Rendering Filters



14.3. Fractal Explorer

14.3.1. Overview

Figure 17.335. Example for the Fractal Explorer filter



Filter "Fractal Explorer" applied

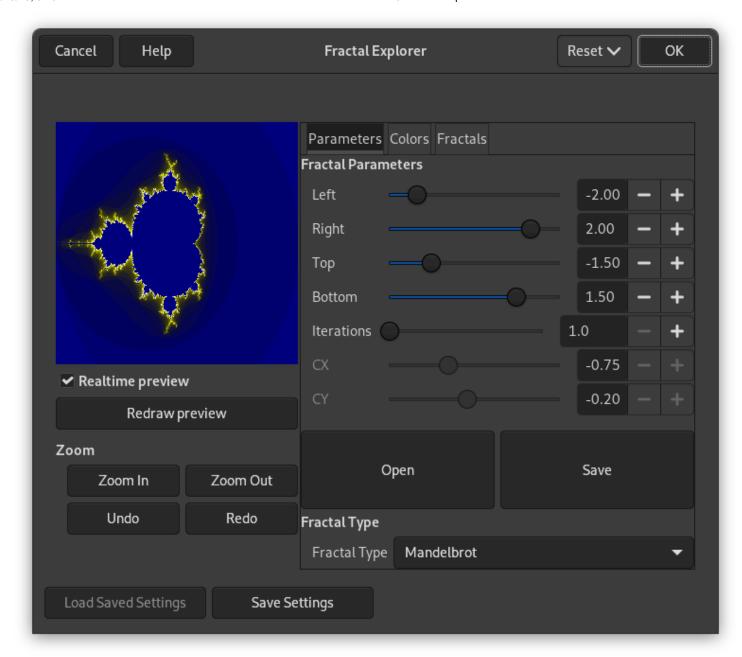
With this filter, you can create fractals and multicolored pictures verging on chaos. This filter lets you pick from a collection of presets that can be adjusted easily. In contrast, the IFS Fractal filter lets you change the fractal structure in more detail, at the cost of being more complicated.

14.3.2. Starting Fractal Explorer

Menu command location for this filter: Filters \rightarrow Render \rightarrow Fractals \rightarrow Fractal Explorer....

14.3.3. Options

Figure 17.336. "Fractal Explorer" filter options



The Fractal Explorer window contains two panes: on the left there is the Preview pane with a Zoom feature, on the right you find the main options organized in tabs: Parameters, Colors, and Fractals.

14.3.3.1. Preview

Realtime preview

You can disable the Realtime preview if updating the preview is slow. In that case, you can update the preview by clicking the Redraw preview button.

By click-dragging the mouse pointer on the preview, you can draw a rectangle delimiting the area that will be zoomed.

Zoom

These buttons allow you to Zoom In or Zoom Out the preview. The Undo button takes you back to the previous state. The Redo button will revert the last Undo.

14.3.3.2. Parameters

This tab contains settings to adjust the calculation and select a fractal type.

Fractal Parameters

These sliders and input boxes allow you to set fractal spreading, repetition and aspect.

Left, Right, Top, Bottom

You can set fractal spreading between a minimum and a maximum, in the horizontal and/or vertical directions. Values are from -3.0 to 3.0.

Iterations

With this parameter, you can set fractal repetition in detail. Values are from 0.0 to 1000.0

CX, CY

With these parameters, you can change fractal aspect, in the horizontal (X) and/or vertical (Y) directions, except for Mandelbrot and Sierpinski types.

Open, Reset, Save

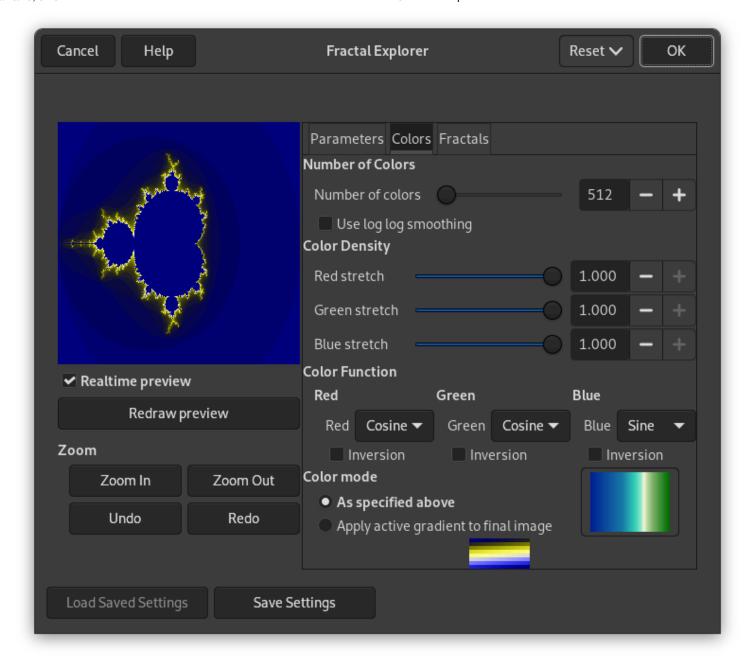
With these three buttons, you can save your work with all its parameters, open a previously saved fractal, or return to the initial state before all modifications.

Fractal Type

Here you can choose the fractal type you want. You can choose from Mandelbrot, Julia, Barnsley 1, 2 or 3, Spider, Man 'o'war, Lambda or Sierpinski.

14.3.3.3. Colors

Figure 17.337. "Fractal Explorer" filter options (Colors)



This tab contains options for fractal color setting.

Number of Colors

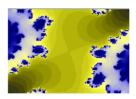
Number of colors

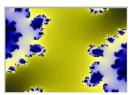
This slider and its input boxes allow you to set the number of colors for the fractal, between 2 and 8192. A palette of these colors is displayed at the bottom of the tab. Actually, that's a gradient between colors in fractal: you can change colors with Color Density and Color Function options. Fractal colors don't depend on the colors of the original image. You can even use a white image for creating fractals.

Use log log smoothing

If this option is checked, the band effect is smoothed.

Figure 17.338. Log log smoothing example





Color density

Red stretch, Green stretch, Blue stretch

These three sliders and their text-boxes let you set the color intensity in the three color channels. Values vary from 0.0 to 1.0

Color Function

For the Red, Green and Blue color channels, you can select how color will be treated:

Sine

Color variations will be modulated according to the sine function.

Cosine

Color densities will vary according to cosine function.

None

Color densities will vary linearly.

Inversion

If you check this option, function values will be inverted.

Color Mode

These options allow you to set where color values must be taken from.

As specified above

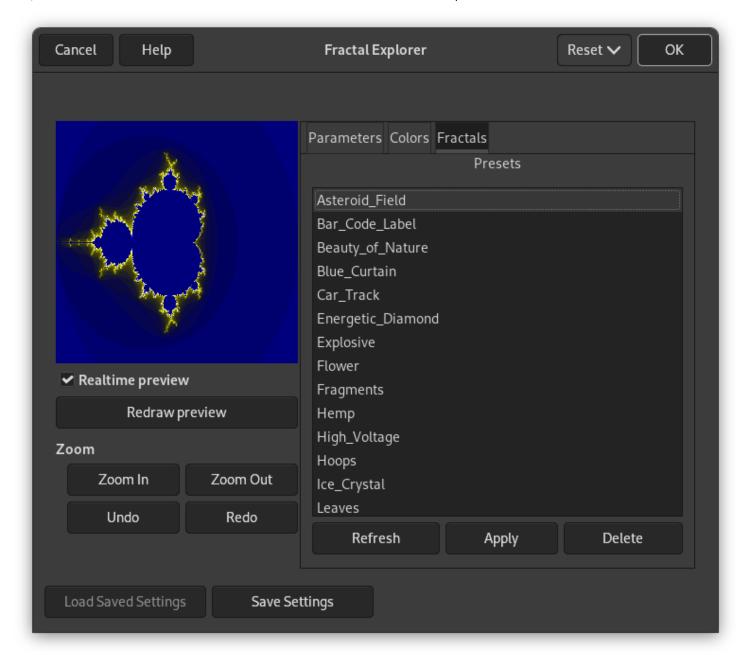
Color values will be taken from the Color Density settings.

Apply active gradient to final image

The colors used will be that of the active gradient. You can select another gradient by clicking on the button that shows the currently active gradient.

14.3.3.4. Fractals

Figure 17.339. "Fractal Explorer" sample fractals



This tab contains a list of fractals with their parameters that you can use as a model and adjust. To select one, you can either double click the name, or click the name and then press Apply.

The Refresh button allows you to update the list if you have saved your work (see the Parameters tab). You can remove a fractal from the list by clicking Delete.



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14.4. IFS Fractal



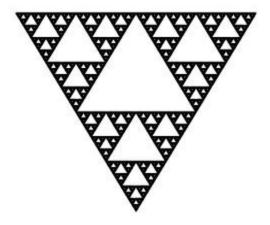
14. Rendering Filters



14.4. IFS Fractal

14.4.1. Overview

Figure 17.340. Applying example for the IFS Fractal filter



Filter "IFS Fractal" applied

This fractal-based plug-in is truly wonderful! With this versatile instrument, you can create amazingly naturalistic organic shapes, like leaves, flowers, branches, or even whole trees. ("IFS" stands for "Iterated Function System".) The key to using this plug-in lies in making very small and precise movements in fractal space. The outcome is always hard to predict, and you have to be extremely careful when you change the pattern. If you make a component triangle too big, or if you move it too far (even ever so slightly), the preview screen will black out, or more commonly, you'll get stuck with a big shapeless particle cloud.

A word of advice: When you have found a pattern you want to work with, make only small changes, and stick to variations of that pattern. It's all too easy to lose a good thing. Contrary to what you might believe, it's really much easier to create a leaf or a tree with IFS Fractal than to make a defined geometrical pattern (where you actually know what you're doing, and end up with the pattern you had in mind).

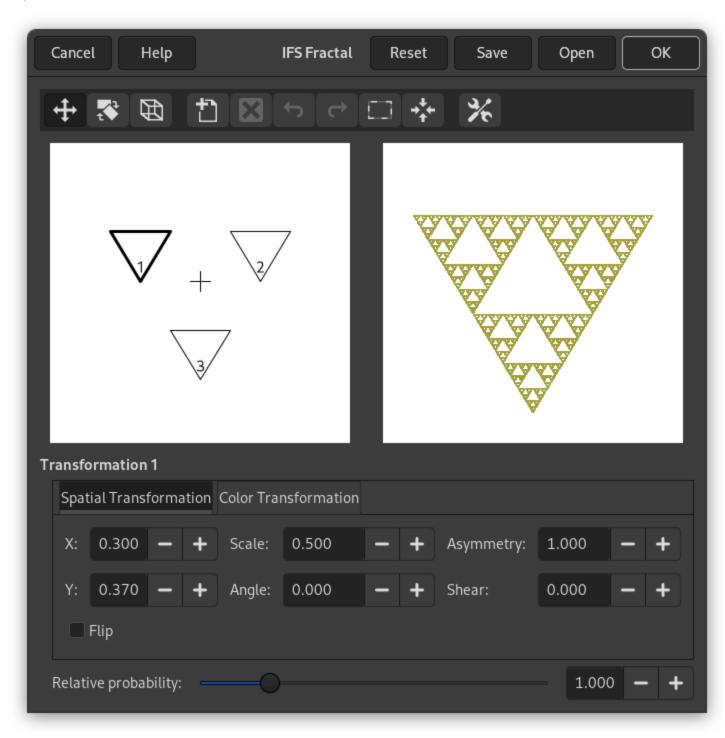
For a brief introduction to IFS's see Foley and van Dam, et al,. Computer Graphics, Principles and Practice[FOLEY01].

14.4.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Render \rightarrow Fractals \rightarrow IFS Fractal....

14.4.3. Options

Figure 17.341. "IFS Fractal" filter options



The plug-in interface consists of the compose area to the left, a preview screen to the right, and some tabs and option buttons at the bottom of the dialog. The Default setting (in the preview window) is three equilateral triangles. (This gives rise to a fractal pattern called the *Sierpinski Triangle*).

Toolbar

Click on the toolbar buttons to use the following tools, or open the context menu of the compose area.

Move, Rotate/Scale, Stretch

Select the action to perform using the (mouse) pointer.

New, Delete

Add or remove fractals.

Undo, Redo

Standard.

Select all

Link fractals and let apply actions to all fractals.

Recenter

Recompute the center of the fractals. This does not have any visible effect to the resulting fractal.

Render Options

Max. memory

Enables you to speed up rendering time. This is especially useful when working with a large spot radius; just remember to use even multiples of the default value: 4096, 8192, 16384, ...

Iterations

Determines how many times the fractal will repeat itself. (A high value for Subdivide and Iterations is for obvious reasons a waste of process time unless your image is very large.)

Subdivide

Controls the level of detail.

Spot radius

Determines the density of the "brushstrokes" in the rendered image. A low spot radius is good for thin particle clouds or spray, while a high spot radius produces thick, solid color strokes much like watercolor painting. Be careful not to use too much spot radius — it takes a lot of time to render.

Spatial Transformation

Gives you information on the active fractal, and allows you to type a value instead of changing it manually. Changing parameters with the mouse isn't very accurate, so this is a useful option when you need to be exact.

X, Y, Scale, Angle, Shear

Move, scale, or shear the active fractal.

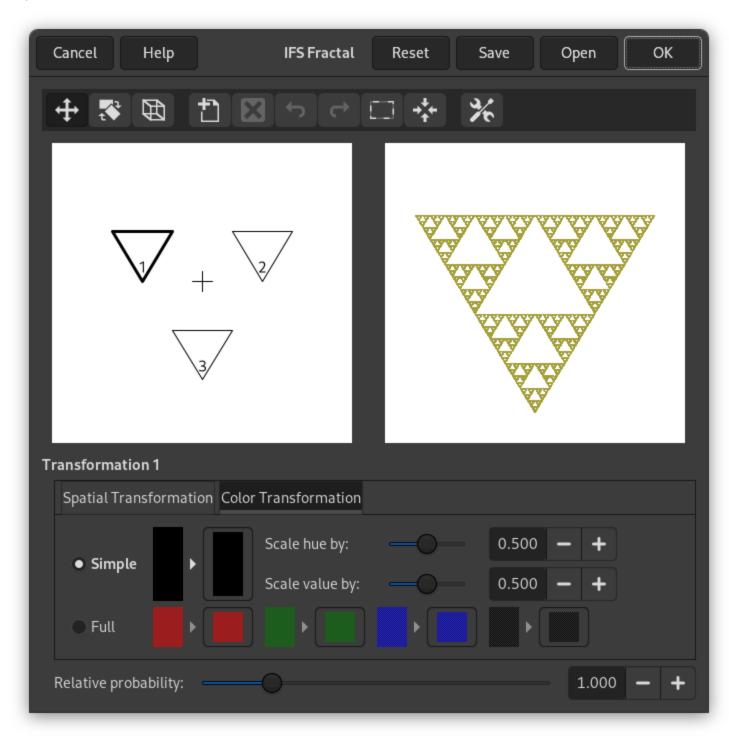
Asymmetry

Stretch the active fractal.

Flip

Flip the active fractal.

Color Transformation



Simple

Changes the color of the currently selected fractal component (default is the foreground color in the toolbox) to a color of your choice.

Full

Like the Simple color transformation but this time you can manage the color transformation for each color channel and for the alpha channel (shown as a black channel).

Scale hue by, Scale value by

When you have many fractals with different colors, the colors blend into each other. So even if you set "pure red" for a fractal, it might actually be quite blue in some places, while another "red" fractal might have a lot of yellow in it. Scale Hue/Value changes the color strength of the active fractal, or how influential that fractal color should be.

Other

Relative probability

Determines influence or total impact of a certain fractal.

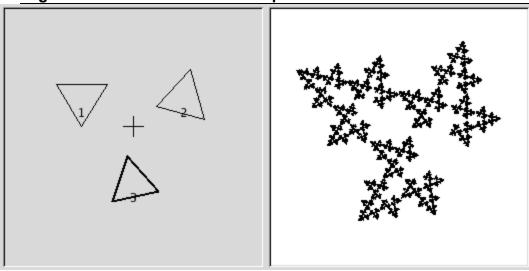
14.4.4. A Brief Tutorial

This is a rather complex plug-in, so to help you understand it, we'll guide you through an example where you'll create a leaf or branch.

Many forms of life, and especially plants, are built like mathematical fractals, i.e., a shape that reproduces or repeats itself indefinitely into the smallest detail. You can easily reproduce the shape of a leaf or a branch by using four (or more) fractals. Three fractals make up the tip and sides of the leaf, and the fourth represents the stem.

- 1. Before invoking the filter: Select File → New Image. Add a transparent layer with Layer → New Layer. Set the foreground color in the toolbox to black, and set the background to white.
- 2. Open IFS Fractal. Start by rotating the right and bottom triangles, so that they point upward. You'll now be able to see the outline of what's going to be the tip and sides of the leaf. (If you have problems, it may help to know that the three vertices of a triangle are not equivalent.)

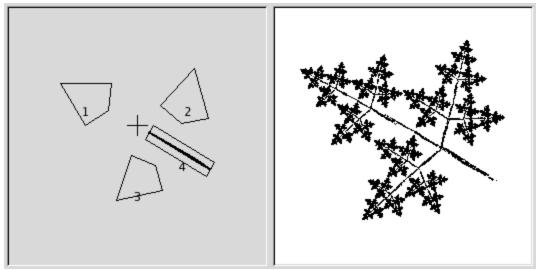
Figure 17.342. Tutorial Step 2



Start by rotating triangles 2 and 3, trying to keep them nearly the same size.

- 3. To make the leaf symmetrical, adjust the bottom triangle to point slightly to the left, and the right triangle to point slightly to the right.
- 4. Press New to add a component to the composition. This is going to be the stem of the leaf, so we need to make it long and thin. Press Stretch, and drag to stretch the new triangle. Don't be alarmed if this messes up the image, just use Scale to adjust the size of the overlong triangle. You'll probably also have to move and rotate the new fractal to make it look convincing.

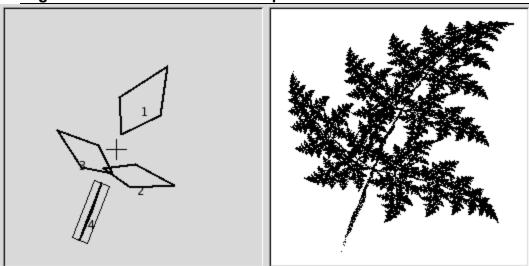
Figure 17.343. Tutorial Step 3



Add a fourth component, then stretch, scale, and move it as shown.

5. You still have to make it look more leaf-like. Increase the size of the top triangle, until you think it's thick and leafy enough. Adjust all fractals until you're happy with the shape. Right-click to get the pop-up menu, and choose Select all. Now all components are selected, and you can scale and rotate the entire leaf.

Figure 17.344. Tutorial Step 4



Enlarge component 1, arrange the other components appropriately, then select all, scale and rotate.

6. The final step is to adjust color. Click on the Color Transformation tab, and choose a different color for each fractal. To do this, check Simple and press the right color square. A color wheel appears, where you can click or select to choose a color.

Figure 17.345. Tutorial Step 5



Assign a brownish color to component 4, and various shades of green to the other components.

7. Press OK to apply the image, and voilà, you've just made a perfect fractal leaf! Now that you've got the hang of it, you'll just have to experiment and make your own designs. All plant-imitating fractals (be they oak trees, ferns or straws) are more or less made in this fashion, which is leaves around a stem (or several stems). You just have to twist another way, stretch and turn a little or add a few more fractals to get a totally different plant.



14.3. Fractal Explorer







14.5. Cell Noise

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3/29/25, 9:43 PM 14.5. Cell Noise

14.5. Cell Noise



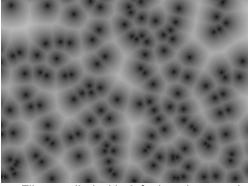
14. Rendering Filters



14.5. Cell Noise

14.5.1. Overview

Generates a cellular texture. Results don't depend on the image you opened.



Filter applied with default options: scale=1.000 shape=2.000 rank=1

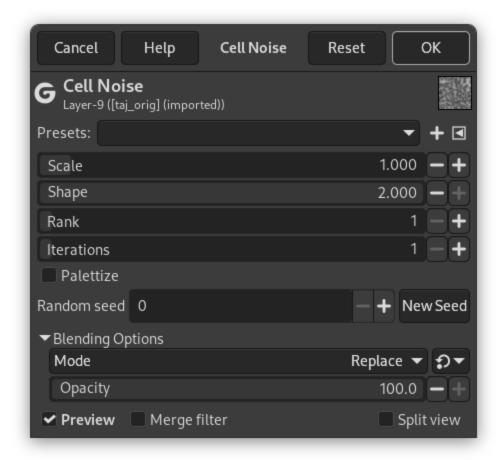
14.5.2. Activating the Filter

This filter is found in the main menu under Filters → Render → Noise → Cell Noise....

14.5.3. Options

Figure 17.346. "Cell Noise" filter options

3/29/25, 9:43 PM 14.5. Cell Noise



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

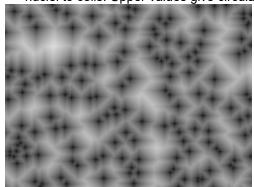
These options are described in Section 2, "Common Features".

Scale

Scale of the noise function: works like a zoom.

Shape

Interpolates between Manhattan and Euclidean distance: (1.000 to 2.000). Lower values give four spikes stars nuclei to cells. Upper values give circular nuclei.

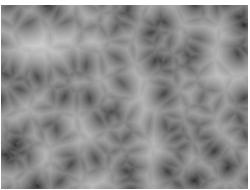


Shape = 1.000

Rank

Selects the n-th closest point: (1-3). Cells are elongated.

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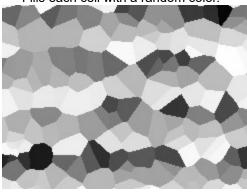
Rank = 2

Iterations

The number of noise octaves.

Palettize

Fills each cell with a random color.





14.4. IFS Fractal







14.6. Perlin Noise

Report a bug in GIMP Report a documentation error

14.6. Perlin Noise



14. Rendering Filters



14.6. Perlin Noise

14.6.1. Overview

This filter generates a noise texture using the Perlin Noise algorithm. Results don't depend on the image you opened.



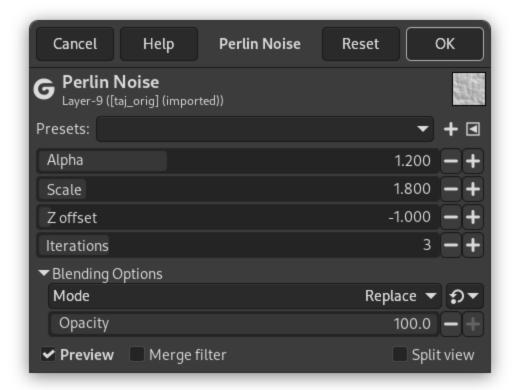
Filter applied with default options: Alpha=1.200 Scale=1.800 Z offset=-1.000 Iterations=3

14.6.2. Activating the Filter

This filter is found in the main menu under Filters → Render → Noise → Perlin Noise....

14.6.3. Options

Figure 17.347. "Perlin Noise" filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



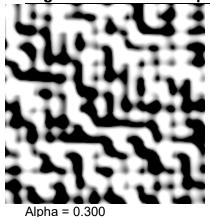
Note

These options are described in Section 2, "Common Features".

Alpha

Low values give sharper noise

Figure 17.348. "Alpha" option examples





Alpha = 3.600

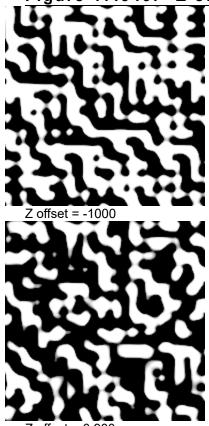
Scale

Scale of the noise function: works like a zoom.

Z offset

Vary noise.

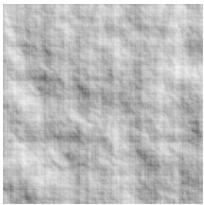
Figure 17.349. "Z offset" option examples



 $Z ext{ offset} = 0.900$

Iterations

The number of noise octaves.



Iterations = 7



3/29/25, 9:44 PM 14.7. Plasma

14.7. Plasma



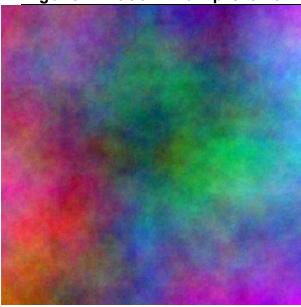
14. Rendering Filters



14.7. Plasma

14.7.1. Overview

Figure 17.350. Example of a rendered plasma



Filter "Plasma" applied

All of the colors produced by Plasma are completely saturated. Sometimes the strong colors may be distracting, and a more interesting surface will appear when you desaturate the image using Colors → Desaturate.

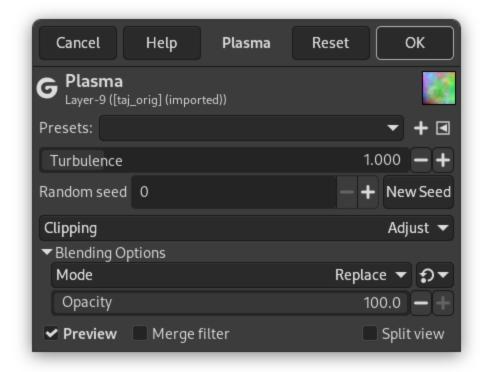
14.7.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Render \rightarrow Noise \rightarrow Plasma....

14.7.3. Options

Figure 17.351. "Plasma" filter options

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Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

Turbulence

This parameter controls the complexity of the plasma. High values give a hard feeling to the cloud (like an abstract oil painting or mineral grains), low values produce a softer cloud (like steam, mist or smoke). The range is 0.0 to 7.0

Random seed, New Seed

This option controls the randomness of the filter. The Random seed box lets you manually enter a seed for the randomization algorithm used. You can also generate a random seed by pressing the New Seed button. If the same random seed is used in the same situation, the filter produces exactly the same results. A different random seed produces different results.









14.8. Simplex Noise

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14.8. Simplex Noise



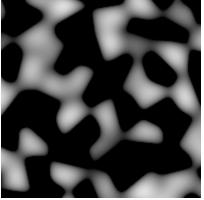
14. Rendering Filters



14.8. Simplex Noise

14.8.1. Overview

This filter generates a noise texture using the Simplex Noise algorithm. Results don't depend on the image you opened



Filter applied with default options

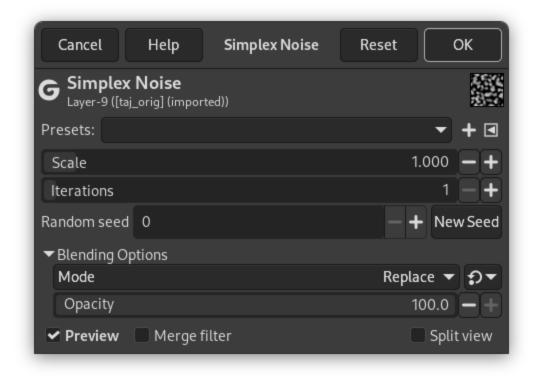
14.8.2. Activating the Filter

This filter is found in the main menu under Filters → Render → Noise → Simplex Noise....

14.8.3. Options

Figure 17.352. "Simplex Noise" filter options

3/29/25, 9:44 PM 14.8. Simplex Noise



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

Scale

Scale of the noise function: works like a zoom.

Iterations

The number of noise octaves.

Random seed, New Seed

This option controls the randomness of the filter. The Random seed box lets you manually enter a seed for the randomization algorithm used. You can also generate a random seed by pressing the New Seed button. If the same random seed is used in the same situation, the filter produces exactly the same results. A different random seed produces different results.







14.7. Plasma



14.9. Solid Noise

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14.9. Solid Noise



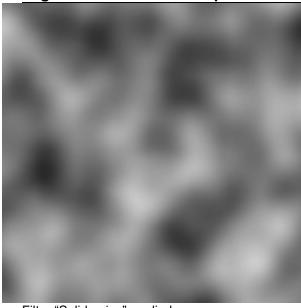
14. Rendering Filters



14.9. Solid Noise

14.9.1. Overview

Figure 17.353. Example of turbulent solid noise



Filter "Solid noise" applied

Solid Noise is a great texture maker. Note that this noise is always gray, even if you applied it to a very colorful image (it doesn't matter what the original image looks like -- this filter completely overwrites any existing background in the layer it is applied to). This is also a good tool to create displacement maps for the Warp transform tool or for the Bump Map filter. With the "turbulence" setting active, the results look quite a bit like real clouds.

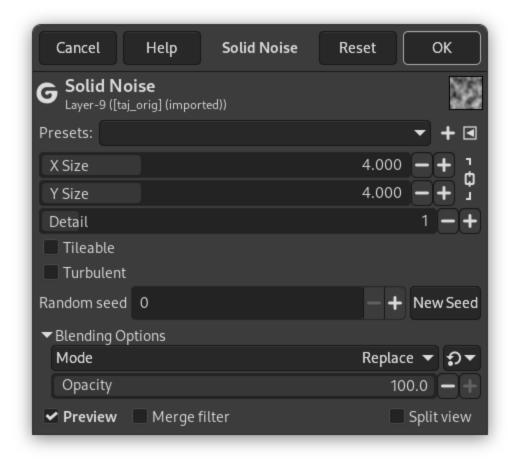
14.9.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Render \rightarrow Noise \rightarrow Solid noise....

14.9.3. Options

Figure 17.354. "Solid Noise" filter options

3/29/25, 9:44 PM 14.9. Solid Noise



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

X size, Y size

These control the size and proportion of the noise shapes in X (horizontal) and Y (vertical) directions (range 0.1 to 16.0).

Detail

This controls the amount of detail in the noise texture. Higher values give a higher level of detail, and the noise seems to be made of spray or small particles, which makes it feel hard. A low value makes it more soft and cloudy.

Tileable

If you check Tileable, you'll get a noise which can be used as tiles. For example, you can use it as a background in an HTML page, and the tile edges will be joined seamlessly.

Turbulent

If you check this, you'll get very interesting effects, often something that looks much like oil on water, or clouds of smoke, or living tissue, or a Rorschach blot.

Random seed, New Seed

This option controls the randomness of the filter. The Random seed box lets you manually enter a seed for the randomization algorithm used. You can also generate a random seed by pressing the New Seed button. If the same random seed is used in the same situation, the filter produces exactly the same results. A different random seed produces different results.











14.10. Difference Clouds



14. Rendering Filters



14.10. Difference Clouds

14.10.1. Overview

Figure 17.355. Example of Difference Clouds



Filter "Difference Clouds" applied

Difference Clouds command changes colors partially in cloud-like areas: The filter renders <u>Solid Noise</u> cloud in an automatically created new layer, and sets the layer mode to <u>Difference</u>, then merges this layer over the specified image.

If the image is in indexed colors, this menu entry is disabled.

14.10.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Render \rightarrow Noise \rightarrow Difference Clouds.

14.10.3. Options

This script has no options.



14.9. Solid Noise





14.11. Bayer Matrix

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14.11. Bayer Matrix



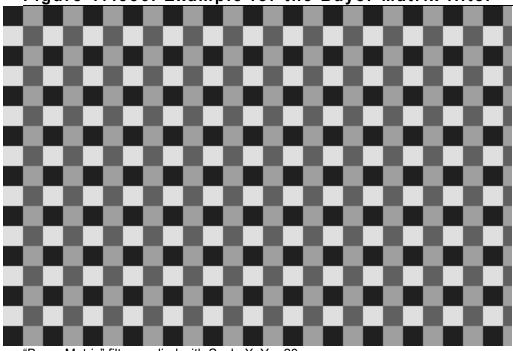
14. Rendering Filters



14.11. Bayer Matrix

14.11.1. Overview

Figure 17.356. Example for the Bayer Matrix filter



"Bayer Matrix" filter applied with Scale X, Y = 20

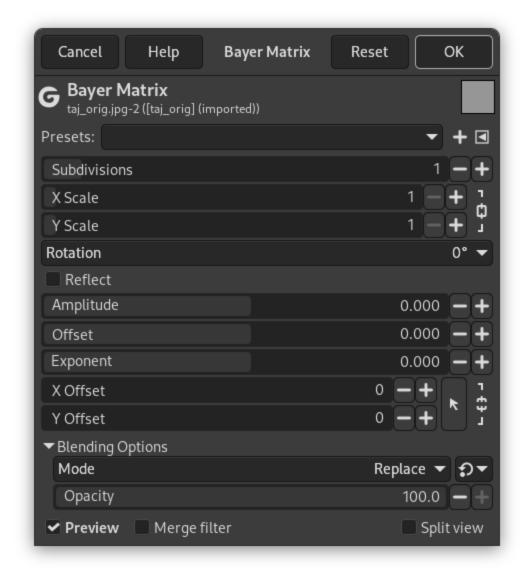
A grand-sounding name for a simple filter. Bayer matrix is related to *ordered dithering*, which is an image dithering algorithm used to display a continuous image on a display of smaller color depth. The algorithm reduces the number of colors by applying a threshold map known as Bayer matrix (Wikipedia). The present filter uses the Bayer matrix only to create a pattern.

14.11.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Render \rightarrow Pattern \rightarrow Bayer Matrix....

14.11.3. Options

Figure 17.357. "Bayer Matrix" filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

Subdivisions

The number of subdivisions used.

X Scale, Y Scale

Horizontal, Vertical pattern size.

Rotation

Pattern rotation angle.

Reflect

Reflect the pattern horizontally when enabled.

Amplitude

Pattern amplitude.

Offset

Value offset.

Exponent

Value exponent using a logarithmic scale.

X Offset, Y Offset

Here you can change the X and Y offsets.

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14.10. Difference Clouds

1

14.12. Checkerboard

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14.12. Checkerboard



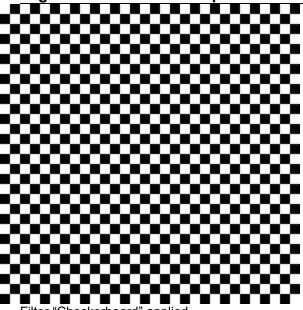
14. Rendering Filters



14.12. Checkerboard

14.12.1. Overview

Figure 17.358. Example for the Checkerboard filter



Filter "Checkerboard" applied

This filter creates a checkerboard pattern replacing the current layer content. Default colors used for pattern are current Fore- and Back-ground colors of toolbox.

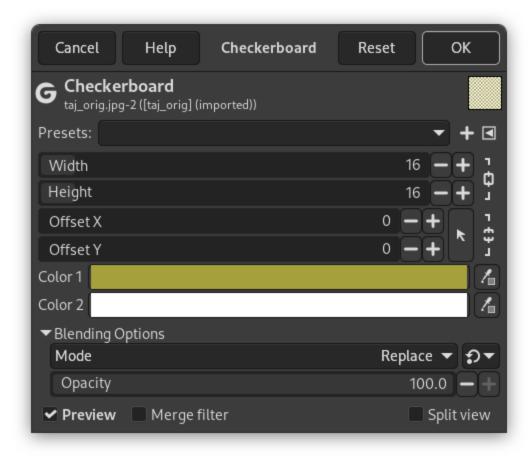
14.12.2. Activating the Filter

This filter is found in the main menu under Filters → Render → Pattern → Checkerboard....

14.12.3. Options

Figure 17.359. "Checkerboard" filter options

3/29/25, 9:45 PM 14.12. Checkerboard



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

Width, Height

With these options, you can set checkerboard horizontal/vertical square size, in pixels.

Increasing Width or Height only will create horizontal or vertical stripes.

Offset X. Offset Y

These options displace squares horizontally (X) or vertically(Y). Value limits are the limits of your screen.

Color 1, Color 2

Default Color 1 is the toolbox foreground color. Default Color 2 is the toolbox background color.

You can change these colors clicking on the color button or using the color picker on the right. Color picker size can be set in the GEGL Operation window under Toolbox.



14.11. Bayer Matrix





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14.13. Diffraction Patterns

14.13. Diffraction Patterns



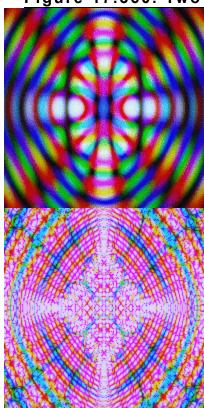
14. Rendering Filters



14.13. Diffraction Patterns

14.13.1. Overview

Figure 17.360. Two examples of diffraction patterns



This filter lets you make diffraction or wave interference textures. You can change the Frequency, Contours and Sharp Edges for each of the RGB channels. You can also set Brightness, Scattering and Polarization of the texture. There is no automatic preview, so you must press the preview button to update. On a slow system, this may take a bit of time. Note that result doesn't depend on the initial image.

This is a very useful filter if you want to create intricate patterns. It's perfect for making psychedelic, batik-like textures, or for imitating patterns in stained glass (as in a church window).

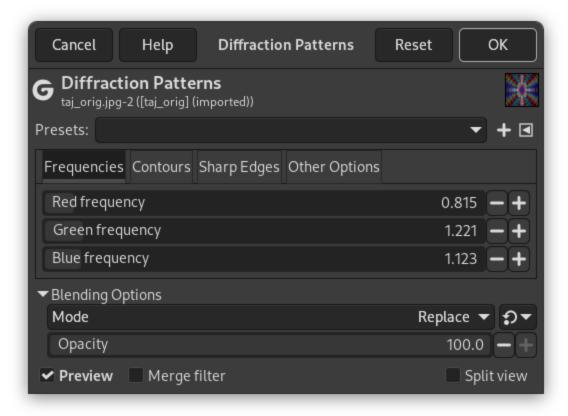
It seems clear that the plug-in works by simulating the physics of light striking a grating. Unfortunately, the original authors never got around to writing down the theory behind it, or explaining what the parameters mean. The best approach, then, is just to twiddle things and see what happens. Fortunately, almost anything you do seems to produce interesting results.

14.13.2. Activating the Filter

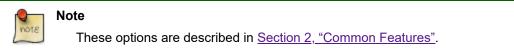
This filter is found in the main menu under Filters \rightarrow Render \rightarrow Pattern \rightarrow Diffraction Patterns....

14.13.3. Options

Figure 17.361. "Diffraction Patterns" filter options



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view





3/29/25, 9:46 PM 14.14. Grid

14.14. Grid

14. Rendering Filters



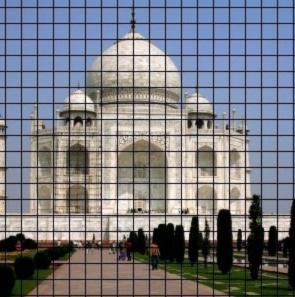
14.14. Grid

14.14.1. Overview

Figure 17.362. Applying example for the Grid filter



Original image



Filter "Grid" applied

It renders a Cartesian grid in the active layer, on top of the existing contents. The width, line width, offsets, and colors of the grid lines can all be set by the user. By default, the lines are with the GIMP's foreground color. This filter is more simple than the <u>Section 14.21, "Grid (legacy)"</u> legacy filter.

14.14.2. Activating the Filter

3/29/25, 9:46 PM 14.14. Grid

This filter is found in the main menu under Filters \rightarrow Render \rightarrow Pattern \rightarrow Grid....

14.14.3. Options

Figure 17.363. "Grid" filter options



By default, the horizontal and vertical settings are locked together, so that all changes are applied symmetrically. If you want to change just one of them, click on the "chain" symbol below it to unlock them.

Besides, for some options, you can select the unit of measurement thanks to a drop-down list.

Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

Width, Height

These are width and height of boxes determined by the grid.

Offset X, Offset Y

Sets the offset for grid lines with respect to the upper left corner.

Line width, Line height

This is thickness of the grid.

Color

Default Color is the toolbox foreground color.

You can change these colors clicking on the color button or using the color picker on the right. Color picker size can be set in the GEGL Operation window under Toolbox.

See also Section 1, "Grids and Guides".

3/29/25, 9:46 PM 14.14. Grid



14.13. Diffraction Patterns



14.15. Linear Sinusoid

3/29/25, 9:46 PM 14.15. Linear Sinusoid

14.15. Linear Sinusoid



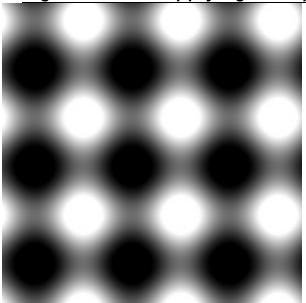
14. Rendering Filters



14.15. Linear Sinusoid

14.15.1. Overview

Figure 17.364. Applying example for the Linear Sinusoid filter



Filter "Linear Sinusoid" applied

You can find this filter from the main menu through Filters → Render → Pattern → Linear Sinusoid....

The Linear Sinusoid filter lets you make sinusoidally based textures, with repeating lighter and darker areas based on a number of adjustable parameters.

The results don't depend on the image you opened.

14.15.2. Options

Figure 17.365. "Linear Sinusoid" filter options dialog

3/29/25, 9:46 PM 14.15. Linear Sinusoid



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

X Period, Y Period

Low values will increase the amount of repeating patterns, high values will enlarge the repeating patterns.

X Amplitude, Y Amplitude

Low values will cause a blurring effect, higher values make the pattern sharper.

X Phase, Y Phase

This determines the offset where the pattern starts.

Angle

This controls the angle at which the pattern is generated.

Offset, Exponent

The value offset and exponent control the relative amount of darker and lighter areas in the pattern.

X Offset, Y Offset

The offset of the X and Y axis.

3/29/25, 9:46 PM 14.15. Linear Sinusoid

Rotation

The rotation angle of the pattern.

Supersampling

The number of samples along each axis per pixel.



3/29/25, 9:46 PM 14.16. Maze

14.16. Maze



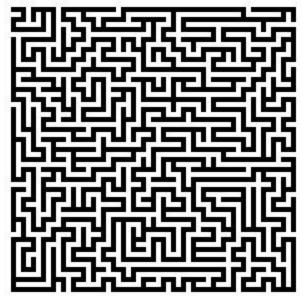
14. Rendering Filters



14.16. Maze

14.16.1. Overview

Figure 17.366. An example of a rendered maze.



Filter "Maze" applied

This filter generates a random black and white maze pattern. The result completely overwrites the previous contents of the active layer. A typical example is shown below. Can you find the route from the center to the edge?

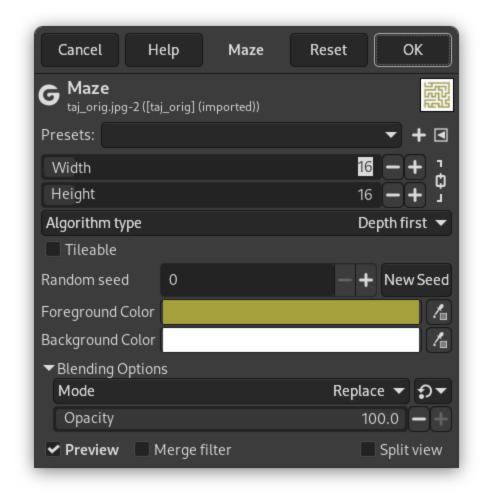
14.16.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Render \rightarrow Pattern \rightarrow Maze....

14.16.3. Options

Figure 17.367. "Maze" filter options

3/29/25, 9:46 PM 14.16. Maze



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

Width. Height

These sliders control how many pathways the maze should have. The lower the values for width and height, the more paths you will get. The same happens if you increase the number of pieces in the Width and Height Pieces fields. The result won't really look like a maze unless the width and height are equal.

Algorithm type

You can choose between these two algorithms for maze: *Depth first* and *Prim's algorithm*. Only a computer scientist can tell the difference between them.

Tileable

If you want to use it in a pattern, you can make the maze tileable by checking this check-button.

Random seed, New Seed

This option controls the randomness of the filter. The Random seed box lets you manually enter a seed for the randomization algorithm used. You can also generate a random seed by pressing the New Seed button. If the same random seed is used in the same situation, the filter produces exactly the same results. A different random seed produces different results.

Foreground color, Background color

You can choose colors for the maze and its background. Defaults are Toolbox colors.











3/29/25, 9:46 PM 14.17. Sinus

14.17. Sinus



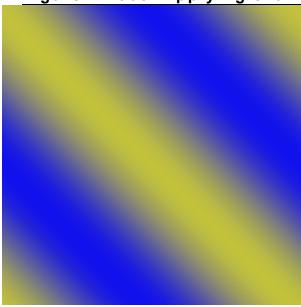
14. Rendering Filters



14.17. Sinus

14.17.1. Overview

Figure 17.368. Applying example for the Sinus filter



Filter "Sinus" applied

You can find this filter from the main menu through Filters → Render → Pattern → Sinus....

The Sinus filter lets you make sinusoidally based textures, which look rather like watered silk or maybe plywood. This plug-in works by using two different colors that you can define in the Colors tab. These two colors then create wave patterns based on a sine function.

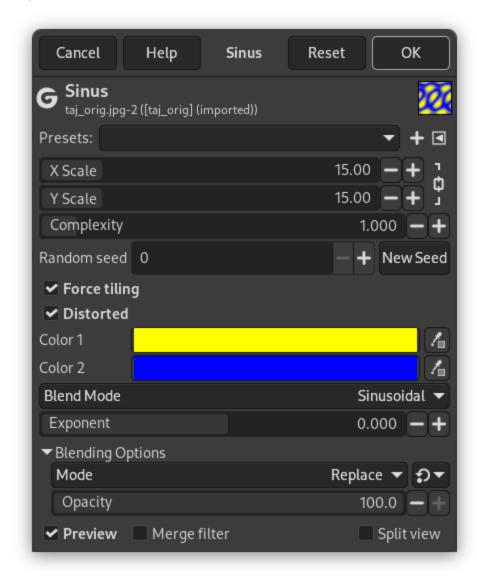
You can set the X and Y scales, which determine how stretched or packed the texture will be. You can also set the Complexity of the function: a high value creates more interference or repetition in the pattern. An example is shown below.

Results don't depend on the image you opened.

14.17.2. Options

Figure 17.369. "Sinus" filter options (Settings)

3/29/25, 9:46 PM 14.17. Sinus



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

X scale, Y scale

A low X/Y value will maximize the horizontal/vertical stretch of the texture, whereas a high value will compress it.

Complexity

This controls how the two colors interact with each other (the amount of interplay or repetition).

Random seed, New Seed

This option controls the randomness of the filter. The Random seed box lets you manually enter a seed for the randomization algorithm used. You can also generate a random seed by pressing the New Seed button. If the same random seed is used in the same situation, the filter produces exactly the same results. A different random seed produces different results.

Force tiling

If you check this, you'll get a pattern that can be used for tiling. For example, you can use it as a background in an HTML page, and the tile edges will be joined seamlessly.

Distorted

This options give additional control of the interaction between the two colors.

Color 1, Color 2

Here, you set the two colors that make up your texture. Default colors are yellow and blue.

Blend Mode

3/29/25, 9:46 PM 14.17. Sinus

You can choose between three functions to set the shapes of the waves that are produced: Linear, Bilinear and Sinusoidal.

Exponent

The Exponent controls which of the two colors is dominant, and how dominant it is. If you set the exponent to -7.5, the left color will dominate totally, and if you set it to +7.5 it will be the other way around. A zero value is neutral.



3/29/25, 9:47 PM 14.18. Spiral

14.18. Spiral



14. Rendering Filters



14.18. Spiral

14.18.1. Overview

Figure 17.370. Applying example for the Spiral filter



Filter "Spiral" applied

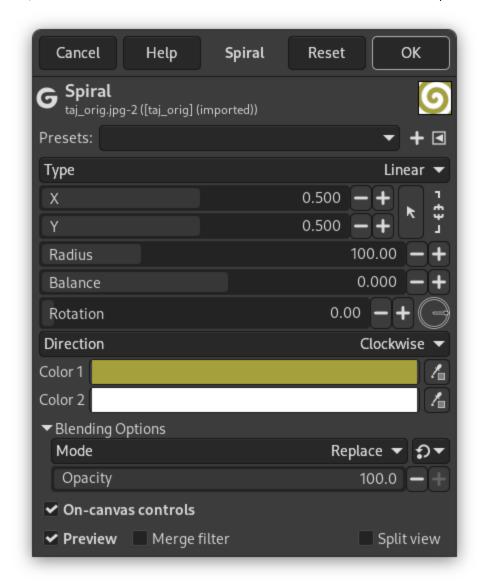
You can find this filter from the main menu through Filters \rightarrow Render \rightarrow Pattern \rightarrow Spiral.... The Spiral filter allows you to make spiral patterns using two different colors. Besides choosing the colors, several other parameters are available to control the appearance of the spiral.

Results don't depend on the image you opened.

14.18.2. Options

Figure 17.371. "Spiral" filter options dialog

3/29/25, 9:47 PM 14.18. Spiral



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view



Note

These options are described in Section 2, "Common Features".

Type

The type of spiral pattern. It can be Linear, where the spiral has the same thickness everywhere, or Logarithmic, where the spiral starts small in the middle and gets larger the closer to the edge you get.

X, Y

The starting offset of the spiral pattern.

Radius

The spiral radius controls the size of the spirals.

Balance

The area balance between the two colors.

Rotation

The rotation angle of the spiral.

Direction

The spiral swirl of the rotation can be either Clockwise, or Counter-clockwise.

Color 1, Color 2

Here, you can set the two colors that make up the spiral.

On-canvas controls

3/29/25, 9:47 PM 14.18. Spiral

If this setting is enabled, which is the default, you can control the Radius, Balance and Rotation with the controls on top of the image.



14.17. Sinus



14.19. Checkerboard (legacy)



14.19. Checkerboard (legacy)

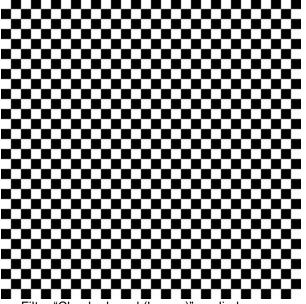
14. Rendering Filters

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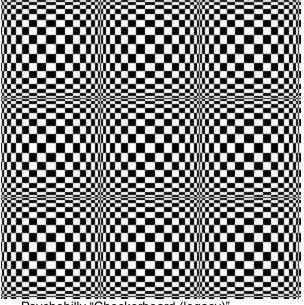
14.19. Checkerboard (legacy)

14.19.1. Overview

Figure 17.372. Example for the Checkerboard (legacy) filter



Filter "Checkerboard (legacy)" applied



Psychobilly "Checkerboard (legacy)"

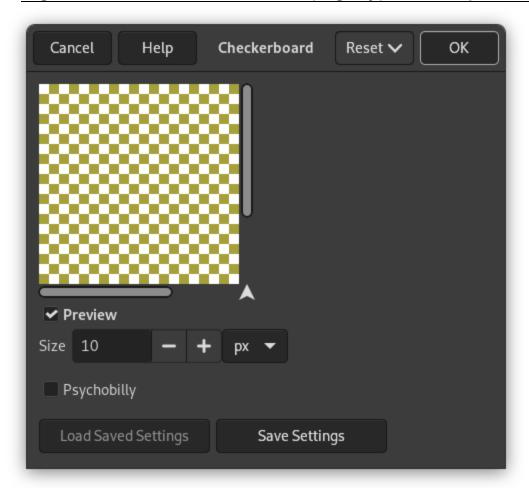
This filter creates a checkerboard pattern replacing the current layer content. Colors used for pattern are current Foreand Back ground colors of toolbox.

14.19.2. Activating the Filter

This filter is found in the main menu under Filters → Render → Pattern → Checkerboard (legacy)....

14.19.3. Options

Figure 17.373. "Checkerboard (legacy)" filter options



Size

With this option, you can set checkerboard square size, in pixels, or in your chosen unit by using the drop-down list. Psychobilly

This option gives an eiderdown look to the Checkerboard.



14.20. CML Explorer

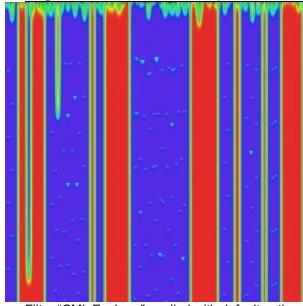




14.20. CML Explorer

14.20.1. Overview

Figure 17.374. Example for the "CML Explorer" filter



Filter "CML Explorer" applied with default options

This filter is very efficient but also very complex. It uses a mathematical method named Cellular Automata [WKPD-CA].

14.20.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Render \rightarrow Pattern \rightarrow CML Explorer....

14.20.3. Options

General Options

Filter options are distributed among Hue, Saturation, Value, Advanced, Others and Misc tabs. Some more options are available. They will be described in following section.

Preview

This filter offers you a Preview where you can see the result of your settings before they are applied to the image.

New Seed, Fix Seed, Random Seed

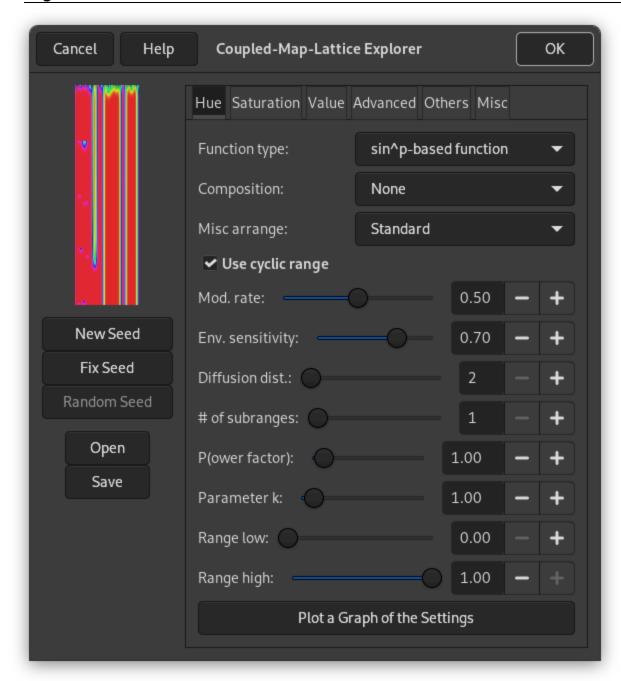
Random plays a large part in creating patterns. With these options, you can influence the way random is generated. By clicking on the New Seed button, you can force random to use a new source of random. The preview will show you the result. Fix Seed lets you keep the same seed and so to reproduce the same effect with the filter. Random Seed generates a random seed at random.

Open, Save

With these both command buttons you can save pattern settings in a file, and to get them back later.

"CML Explorer" filter options (Hue)

Figure 17.375. Hue tab



This filter works in the <u>HSV</u> color model. In this tab, you can set options for Hue.

Function type

In this drop-down list, you can select the method that will be used to treat the current layer. These methods are:

Keep image's values

With this option, image hue values will be kept.

Keep the first value

With this option, starting color will be standard cyan.

Fill with parameter k

Pattern look will depend on k that you will set later in options.

Miscellaneous f(k)

See above, "Fill with k parameter".

Delta function, Delta function stepped

sin^p-based function, sin^p, stepped

These options create wave-like patterns, like aurora borealis or curtain folds.

Composition

Here, these options concern Hue. You can choose among several functions, and a book could be filled with results of all these functions. Please, experiment!

Misc. arrange

This drop-down list offers you several other parameters. Also a book would be necessary to explain all possibilities of these parameters.

Use cyclic range

Mod. rate

With this slider and the input box, you can set modification rate from 0.0 to 1.0. Low value results in a lined pattern.

Env. sensitivity

Value is from 0.0 to 1.0

Diffusion dist.

Diffusion distance: from 2 to 10.

of subranges

Number of sub-ranges: from 1 to 10.

(P)ower factor

With this option you can influence the Function types using the p parameter. Value from 0.0 to 10.0.

Parameter k

With this option you can influence the Function types using the *k* parameter. Value from 0.0 to 10.0.

Range low

Set lower limit of hue that will be used for calculation. values vary from 0.0 to 1.0.

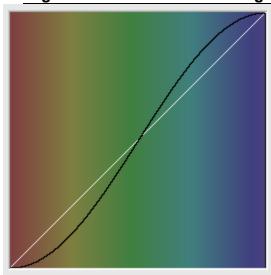
Range high

Set the upper limit of hue that will be used for calculation. Variations are from 0.0 to 1.0.

Plot a Graph of the Settings

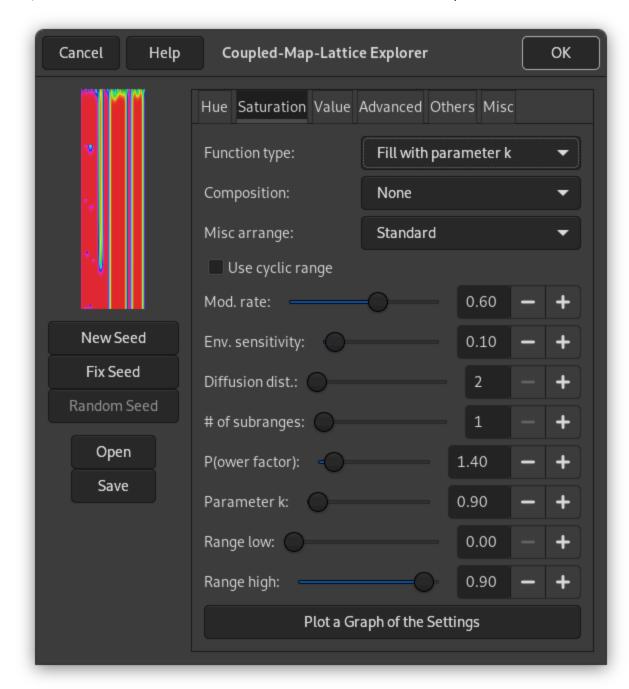
By clicking on this large button, you can open a window that displays the graph of hue present settings.

Figure 17.376. Function graph of present settings



"CML Explorer" filter options (Saturation)

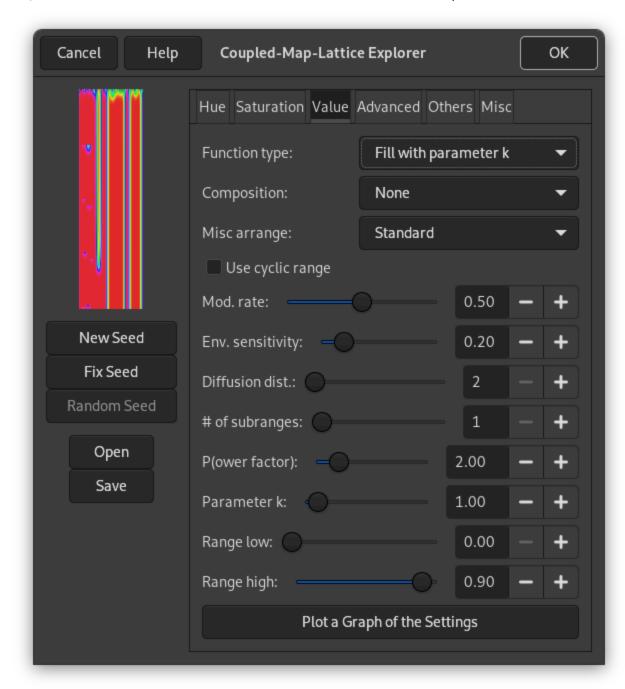
Figure 17.377. Saturation tab



In this tab, you can set how Saturation component of the HSV color model will be used in pattern calculation. These options are similar to Hue tab options.

"CML Explorer" filter options (Value)

Figure 17.378. Value tab

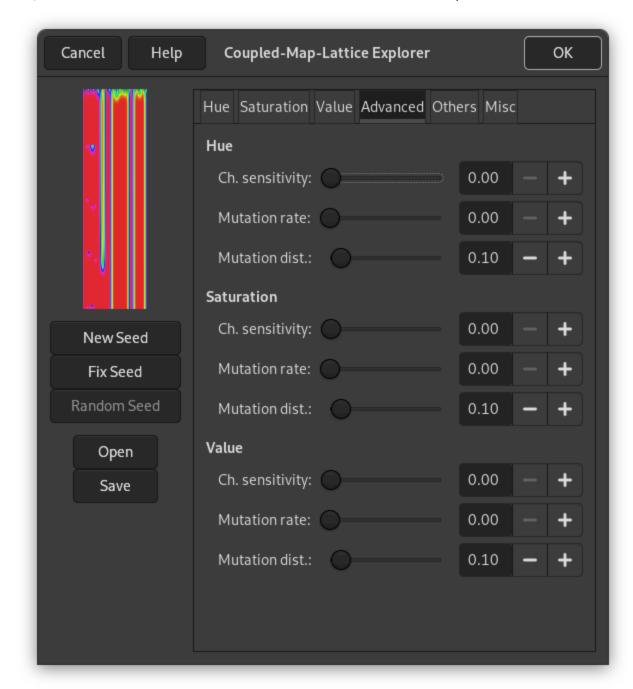


In this tab, you can set how the Value (Luminosity) component of the HSV color model will be used in pattern calculation.

These options are similar to Hue tab options.

"CML Explorer" filter options (Advanced)

Figure 17.379. Advanced tab

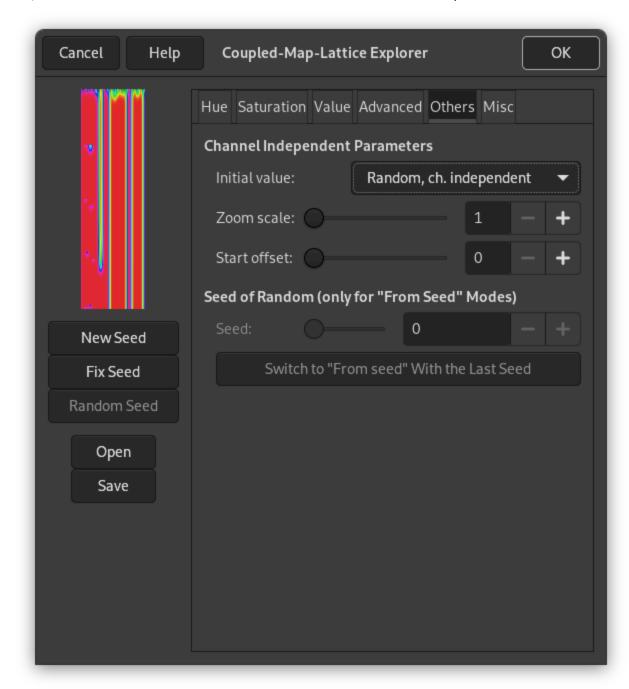


These tab settings apply to the three HSV channels.

Channel sensitivity
Mutation rate
Mutation distance

"CML Explorer" filter options (Others)

Figure 17.380. Others tab



In this tab, you can find various parameters about image display and random intervention.

Initial value

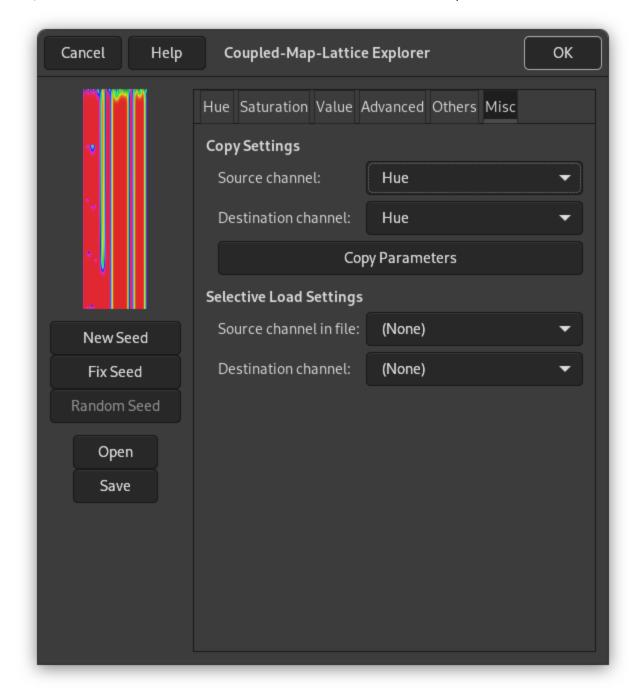
Zoom scale

Start offset

Seed of Random

"CML Explorer" filter options (Misc)

Figure 17.381. Miscellaneous options tab



In this tab you can find various options about copy and loading.

Copy Settings

These options allow you to transfer information from one of the HSV channel to another one.

Selective Load Settings

With the Open button of this filter, you can load previously saved settings. If you don't want to load all of them, you can select a source and a destination channel here.











14.21. Grid (legacy)

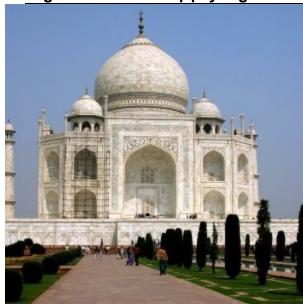




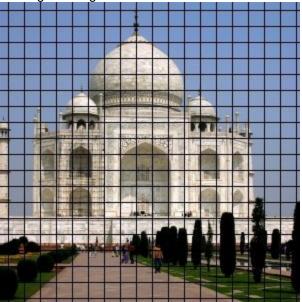
14.21. Grid (legacy)

14.21.1. Overview

Figure 17.382. Applying example for the Grid (legacy) filter



Original image



Filter "Grid (legacy)" applied

It renders a Cartesian grid in the active layer, on top of the existing contents. The width, spacing, offsets, and colors of the grid lines can all be set by the user. By default, the lines are with the GIMP's foreground color. (Note: this plug-in was used to create demonstration images for many of the other plug-ins.)



Tip

3/29/25, 9:47 PM 14.21. Grid (legacy)

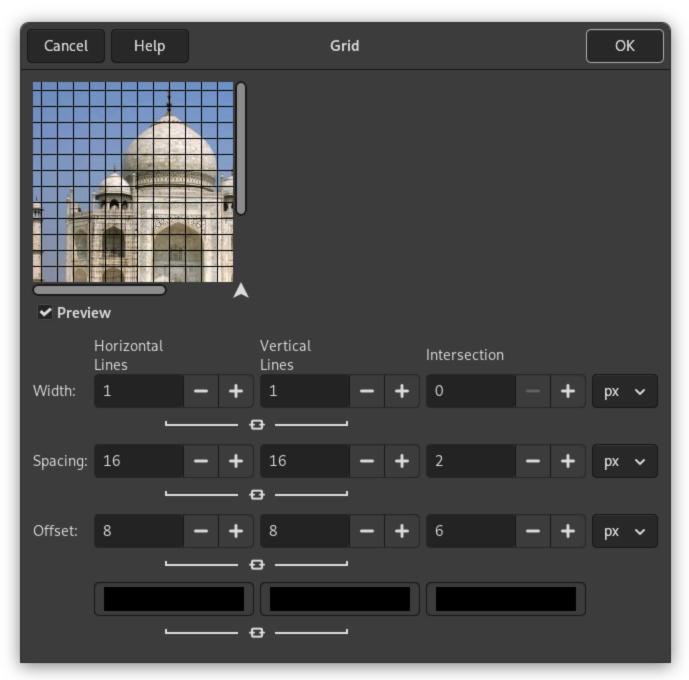
If you set the grid line widths to 0, then only the intersections will be drawn, as plus-marks.

14.21.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Render \rightarrow Pattern \rightarrow Grid (legacy)....

14.21.3. Options

Figure 17.383. "Grid (legacy)" filter options



There are separate options for controlling the horizontal grid lines, vertical grid lines, and intersections. By default, the horizontal and vertical settings are locked together, so that all changes are applied symmetrically. If you want to change

just one of them, click on the "chain" symbol below it to unlock them. The results of changing the Intersection parameters are rather complex.

Besides, for some options, you can select the unit of measurement thanks to a drop-down list.

Width

Sets the widths of the horizontal or vertical grid lines, or of the symbols drawn at their intersections.

Spacing

Sets the distance between grid lines. The Intersection parameter clears the space between the intersection point and the end of the arms of the intersection crosses.

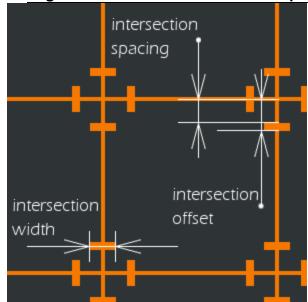
Offset

Sets the offset for grid lines with respect to the upper left corner. For intersections, sets the length of the arms of the intersection crosses.

Color Selectors

These allow you to set the colors of the grid lines and intersection marks.

Figure 17.384. Intersection parameters



intersection offset intersection spacing width > 2 × Spacing



14.20. CML Explorer

1

14.22. Jigsaw

3/29/25, 9:48 PM 14.22. Jigsaw

14.22. Jigsaw





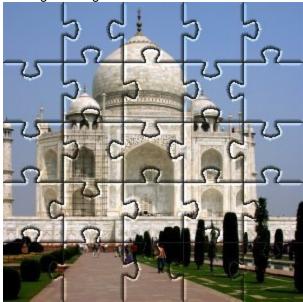
14.22. Jigsaw

14.22.1. Overview

Figure 17.385. Jigsaw filter example



Original image



Filter "Jigsaw" applied

This filter will turn your image into a jigsaw puzzle. The edges are not anti-aliased, so a little bit of smoothing often makes them look better (i. e., Gaussian blur with radius 1.0).



Tip

If you want to be able to easily select individual puzzle-piece areas, render the jigsaw pattern on a separate layer filled with solid white, and

3/29/25, 9:48 PM 14.22. Jigsaw

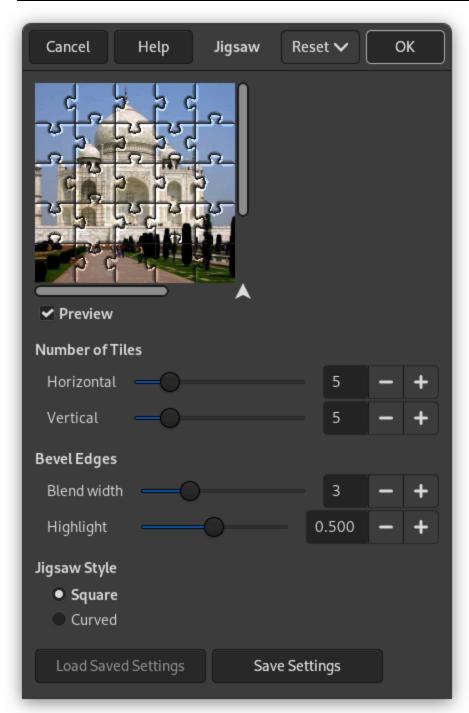
set the layer mode to Multiply. You can then select puzzle pieces using the <u>magic wand</u> (fuzzy select) tool on the new jigsaw layer.

14.22.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Render \rightarrow Pattern \rightarrow Jigsaw....

14.22.3. Options

Figure 17.386. "Jigsaw" filter options



3/29/25, 9:48 PM 14.22. Jigsaw

Number of Tiles

How many tiles across the image is, horizontally and vertically.

Bevel Edges

Bevel width

The Bevel width slider controls the slope of the edges of the puzzle pieces (a hard wooden puzzle would require a low Bevel width value, and a soft cardboard puzzle would require a higher value).

Highlight

The Highlight slider controls the strength of the highlight that will appear on the edges of each piece. You may compare it to the "glossiness" of the material the puzzle is made of. Highlight width is relative to the Bevel width. As a rule of thumb, the more pieces you add to the puzzle, the lower Bevel and Highlight values you should use, and vice versa. The default values are suitable for a 500×500 pixel image.

Jigsaw Style

You can choose between two types of puzzle:

Square

Then you get pieces made with straight lines.

Curved

Then you get pieces made with curves.







14.21. Grid (legacy)



14.23. Qbist

3/29/25, 9:48 PM 14.23. Qbist

14.23. Qbist

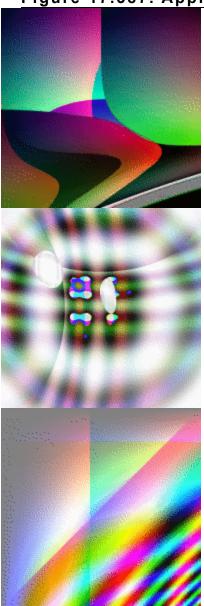
14. Rendering Filters



14.23. Qbist

14.23.1. Overview

Figure 17.387. Applying examples for the Qbist filter



The Qbist filter generates random textures containing geometric figures and color gradients.

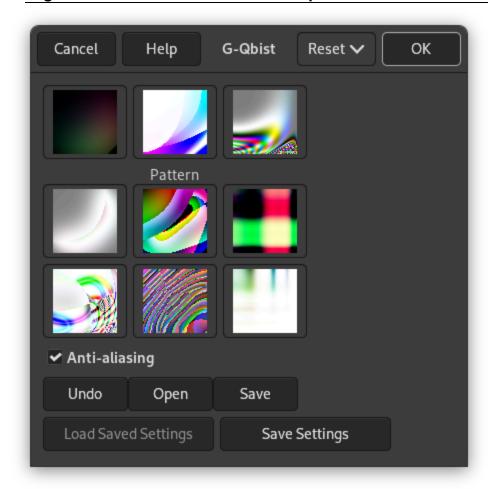
14.23.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Render \rightarrow Pattern \rightarrow Qbist....

3/29/25, 9:48 PM 14.23. Qbist

14.23.3. Options

Figure 17.388. "Qbist" filter options



The Qbist filter generates random textures. A starting texture is displayed in the middle square, and different variations surround it. If you like one of the alternative textures, click on it. The chosen texture now turns up in the middle, labeled "Pattern", and variations on that specific theme are displayed around it. When you have found the texture you want, click on it and then click OK. The texture will now appear on the currently active layer, completely replacing its previous contents.

Anti-aliasing

If you check this, it will make edges appear smooth rather than stair-step-like.

Undo

Lets you go back one step in history.

Open, Save

These buttons allow you to save and reload your textures. This is quite handy because it's almost impossible to recreate a good pattern by just clicking around.











14.24. Circuit

3/29/25, 9:48 PM 14.24. Circuit

14.24. Circuit



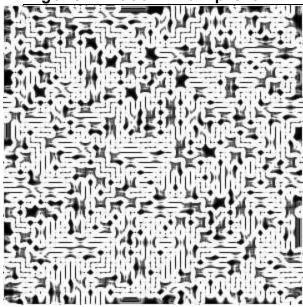
14. Rendering Filters



14.24. Circuit

14.24.1. Overview

Figure 17.389. Example of Circuit



Filter "Circuit" applied.

Circuit command is a script that fills the selected region (or alpha) with traces like those on the back of an old circuit board. It looks even better when gradmapped with a suitable gradient.



Tip

The effect seems to work best on odd shaped selections because of some limitations in the maze codes selection handling ability.

If the image is in indexed colors, this menu entry is disabled.



Note

This filter creates a gray level image in RGB mode.

The resulting image doesn't depend on the original image.

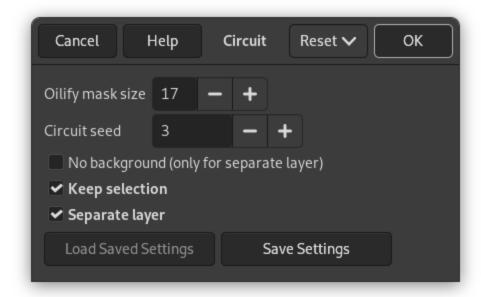
14.24.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Render \rightarrow Circuit....

14.24.3. Options

Figure 17.390. "Circuit" filter options

3/29/25, 9:48 PM 14.24. Circuit



Oilify mask size

With this option you can set the option value of the <u>Oilify</u> filter in pixels (range 3 to 50). Larger values make lines more fuzzy. 17 is the default value.

Circuit seed

You can give a randomizing seed number between 1 and 3000000. The default value is 3.

No background (only for separate layer)

If this option is enabled, dark pixels of the circuit are made transparent so that the underlying image is shown through these holes. This option is disabled in default settings. The Separate layer option is required.

Keep selection

If an active selection exists when this script is called, you can keep the selection and its <u>marching ants</u> with this option. This option is enabled in default settings.

Separate layer

If this option is not checked, the generated texture is drawn on the active layer. When this option is enabled (in default), this script adds a layer to draw the circuit texture is on.

14.24.4. Making the Circuit effect

The Circuit effect is achieved through the following steps:

- 1. First, draw maze with 5 pixels width pathways and walls with the "Depth First" algorithm. The pattern of maze is set by Circuit seed.
- 2. Oilify this maze with a brush of Oilify mask size.
- 3. Then apply the <u>extract edge</u> filter with Sobel algorithm, Smear option and Amount to 2.0, to the oilified maze image. This crowds high contrast winding curves like as a circuit map.
- 4. Finally, <u>Desaturate</u> the map with gray color in RGB mode.



14.23. Qbist







14.25. Gfig

3/29/25, 9:48 PM 14.25. Gfig

14.25. Gfig

14. Rendering Filters



14.25. Gfig

14.25.1. Overview

Figure 17.391. The same image, before and after using Gfig



Original image



Filter "Gfig" applied

This filter is a tool: You can create geometrical figures to add them to the image.

When using this filter, elements inserted in the image will be placed in a new layer. So the image will not be modified, all modifications occurring in this layer.

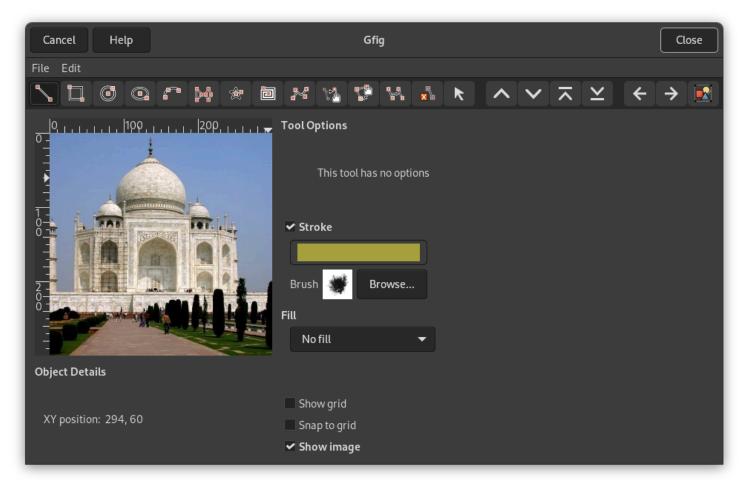
14.25.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Render \rightarrow Gfig....

14.25.3. Options

Figure 17.392. "Gfig" filter options

3/29/25, 9:48 PM 14.25. Gfig



The Preview (with a horizontal and a vertical ruler) on the left of the main window actually is your working area where you are adding your figures. You can add and modify figures using the Gfig tools (Gfig tool bar) and using the appropriate options (Gfig main window).

14.25.3.1. The Gfig tool bar

At the top of dialog, you can find a set of icons which represents the functions of this filter. Help pop-ups are explicit.

Functions for object drawing

On the left part of tool bar, you can find some functions for object drawing. You enable them by clicking on the corresponding icon. You can create the following objects (note that *Control points* are created at the same time as object):

Create line

With this tool, you can draw lines. Click on Preview to mark start point, then drag mouse pointer to the end point.

Create rectangle

With this tool, you can draw rectangles. Click on Preview to mark start point, then drag mouse pointer to create the rectangle.

Create circle

With this tool, you can draw circles. Click on Preview to mark center, then drag mouse pointer to the wanted radius.

Create ellipse

With this tool, you can draw ellipses. Click on Preview to mark center, then drag mouse pointer to get the wanted size and form.

Create ard

With this tool, you can draw circle arcs. Click on Preview to set start point. Click again to set another arc point. Without releasing mouse button, drag pointer; when you release mouse button, the arc end point is placed and an arc encompassing these three points is drawn.

Create regular polygon

With this tool, you can create a regular polygon. Start with setting side number in Tool Options at the right of Preview. Then click on Preview to place center and, without releasing mouse button, drag pointer to get the wanted size and orientation.

Create sta

With this tool, you can create a star. Start with setting side number (spikes) in Tool Options at the right of Preview. Then click on Preview to place center and, without releasing mouse button, drag pointer to get the wanted size and orientation.

Create spiral

With this tool, you can create a spiral. Start with setting spire number (sides) and spire orientation in Tool Options at the right of Preview. Then click on Preview to place center and, without releasing mouse button, drag pointer to get the wanted size.

Create bezier curve

With this tool, <u>you can</u> create Bézier curves. Click on Preview to set start point and the other points: the curve will be created between these points. To end point creation press | Shift | key when creating last point.

Functions for object management

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In the middle of tool bar, you can find tools to manage objects:

Move an object

With this tool, you can move the active object. To enable an object, click on a control point created at the same time as the object.

Move a single point

With this tool, you can click-and-drag one of the control points created at the same time as object. Each of these points moves the object in a different way.

Copy an object

With this tool, you can duplicate an object. Click on an object control point and drag it to the wanted place.

Delete an object

Click on an object control point to delete it.

Select an object

With this tool, you can select an object to activate it. Simply click on one of its control points.

Functions for object organisation

At the right of tool bar, you can find tools for object superimposing (you can also get them by clicking on the drop-down list button if they are not visible). You have:

Up (Raise selected object), Down (Lower selected object)

With this tool, you can push the selected object one level up or down.

Top, Bottom

Self explanatory.

Functions for object display

Back, Forward

These functions allow you to jump from one object to another. Only this object is displayed.

Show all objects

This function shows all objects again, after using both previous functions.



Note

If your window is too small to show all icons, the tool bar provides a dropdown list which offers you the missing functions.

14.25.3.2. The Gfig main window

Object Details

The XY position shows the position of your pointer.

Tool Options

If the selected tool provides some options (like number of sides), you can change them here.

Stroke

If this option is checked, the object will be drawn. Two buttons are available, to select color and brush type. Changes to color or brush apply to existing objects too

Fill \

With help of this drop-down list, you can decide whether and how the object will be filled, with a color, a pattern or a gradient.

Show grid

If this option is checked, a grid is applied on Preview to make object positioning easier.

Snap to grid

If this option is checked, objects will align to the grid.

Show image

When this option is checked, the current image is displayed in Preview (working area).

+

14.24. Circuit

T

14.26. Lava

3/29/25, 9:48 PM 14.26. Lava

14.26. Lava

14. Rendering Filters



14.26. Lava

14.26.1. Overview

Figure 17.393. Example for the "Lava" filter



Original image



"Lava" applied (on a selection)

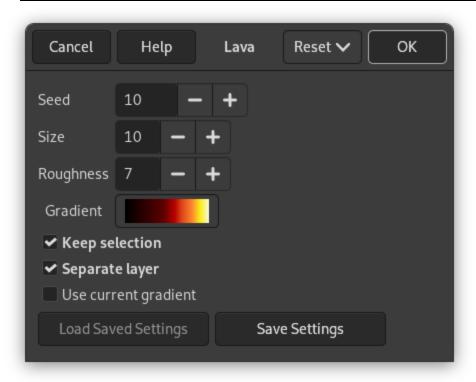
The lava filter generates a lava-like effect on the current layer or selection.

14.26.2. Activating the Filter

3/29/25, 9:48 PM 14.26. Lava

14.26.3. Options

Figure 17.394. "Lava" options



Seed

The lava generator uses randomization to generate the rendered lava. Seed determines the starting value. Using the same seed generates the same lava pattern.

Size

This determines the size of the lava flows. Higher values create straighter lines.

Roughness

This controls the straightness and amount of turns of the lava lines.

Gradient

This allows you to set the <u>gradient</u> to be used for the lava effect.

Keep selection

If a selection is present, the lava filter only creates lava inside the selection. This setting decides whether to keep the selection after the filter has finished.

Separate layer

When enabled the lava is created on a new layer; when disabled the lava is added to the current layer.

Use current gradient

When enabled this selects the current gradient as set in the Gradient tool.



3/29/25, 9:49 PM 14.27. Line Nova

14.27. Line Nova

14. Rendering Filters



14.27. Line Nova

14.27.1. Overview

Figure 17.395. Example for the "Line Nova" filter



Original image



"Line Nova" applied

The Line Nova filter fills a layer with rays emanating outward from the center of the layer using the foreground color shown in the Toolbox. The rays starts as one pixel and grew broader towards the edges of the layer.



Tip

This filter does not provide any option which allows you to set the center point of lines. If you need adjust the place of the radial lines where you want, create another transparent image and apply this filter on it, then

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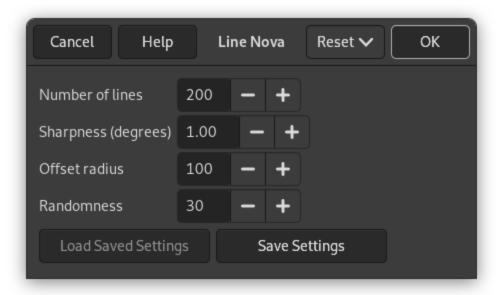
add it on your image. Setting large size for the new nova image may help you not to break lines inside of your image.

14.27.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Render \rightarrow Line Nova....

14.27.3. Options

Figure 17.396. "Line Nova" options



Number of lines

By using this option you can set the number of lines between 40 to 1000. The default is 200.

Sharpness (degrees)

This slider determines how much the rays will broaden towards the edges. The range goes from 0.0 to 10.0. If set to 0.0, nothing will be drawn. If set to 10.0, most of the area near the edges of the layer will be painted.

Figure 17.397. "Line Nova" sharpness option



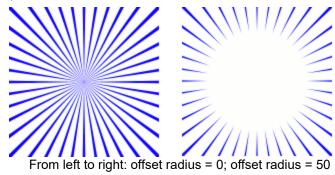
From left to right: sharpness = 1; sharpness = 5; sharpness = 10

Offset radius

Here you choose the distance, in pixels, from center to the starting point of the rays. If set to 0.0 the rays starts from the center. Any other value will let the starting points be on a circle at the selected distance from the center. The maximum distance is 2000 pixels. The default value is 100 pixels.

Figure 17.398. "Line Nova" offset radius option

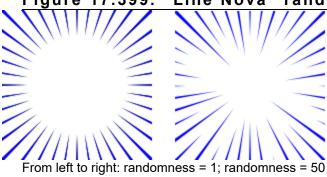
3/29/25, 9:49 PM 14.27. Line Nova



Randomness

If this slider is set to a value higher than 1, the starting point for each ray differ more or less randomly from the average starting point set as the offset radius above. With the value set to 1, all the rays will start at the circle determined by the offset radius. The maximum value is 2000. The default value is 30.







14.26. Lava





14.28. Sphere Designer

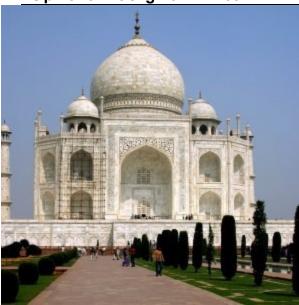
14. Rendering Filters



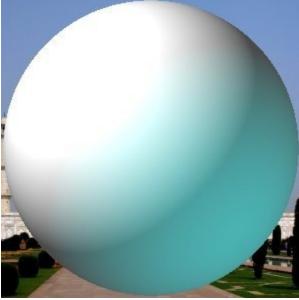
14.28. Sphere Designer

14.28.1. Overview

Figure 17.400. The same image, before and after the application of "Sphere Designer" filter.







Filter "Sphere Designer" applied

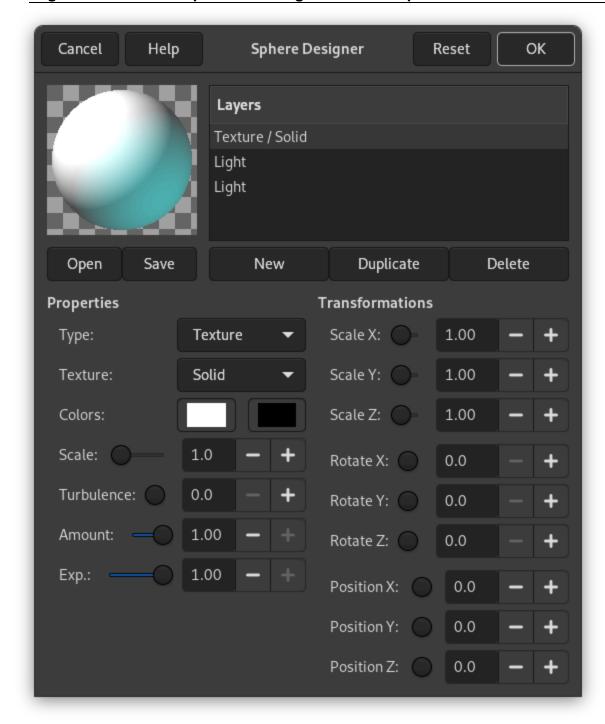
This filter creates a three dimensional sphere with different textures. It replaces the original image.

14.28.2. Activating Sphere Designer

You can find this filter through Filters \rightarrow Render \rightarrow Sphere Designer....

14.28.3. Options

Figure 17.401. "Sphere Designer" filter parameters



Preview

All your setting changes will appear in the Preview without affecting the image until you click on OK. Note that the preview displays the whole image, even if the final result will concern a selection. Click the button *Update Preview* to see the result of the current settings.

Textures

The list of textures applied to the sphere. The textures are applied in the order listed. Each item shows the type and the name of the texture.

New

Creates a new texture and adds it to the end of the list. The name and the features of this new texture are the ones which are displayed in the Texture Properties area, but you can change them by operating in this area, provided that your new texture is highlighted.

Duplicate

Copies the selected texture and adds the copy to the end of the list.

Delete

Deletes the selected texture from the list.

Open, Save

Allows to save current settings or load previously saved settings.

Properties

Type

Determines the type of action on the sphere.

Texture

Covers the sphere with a specific pattern.

Bumpmap

Gives some relief to the texture.

Light

Lets you set the parameters of the light shining on the sphere.

Texture

Determines the pattern used by the texture type. If the texture applies to light then the light is distorted by this texture as if it was going through this texture before falling onto the sphere. If the texture applies to the texture itself, the texture is applied directly to the sphere. Several options are available.

Colors

Sets the two colors to be used for a texture. By pressing the color button a color selection dialog appears.

Scale

Determines the size of separate elements composing the texture. For example, for the "Checker" texture this parameter determines the size of black and white squares. Value range is from 0 to 10.

Turbulence

Determines the degree of texture distortion before applying the texture to the sphere. Value range is from 0 to 10. With values of up to 1.0 you can still make out the undistorted patterns; beyond that the texture gradually turns into noise.

Amount

Determines the degree of influence the texture has on the final result. Value range is from 0 to 1. With the value of 0 the texture does not affect the result.

Exponent

With the Wood texture, this option gives an aspect of venetian blind, more or less open.

Transformations

Scale X, Scale Y, Scale Z

Determines the degree of stretching/compression of the texture on the sphere along the three directions. The value range is from 0 to 10.

Rotate X, Rotate Y, Rotate Z

Determines the amount of a turn of the texture on the sphere around the three axes. The value range is from 0 to 360.

Position X, Position Y, Position Z

Determines the position of the texture relative to the sphere. When type is Light, this parameter refers to the position of the light floodlighting the sphere.

The Reset button sets all parameters to the default values.



14.27. Line Nova







14.29. Spyrogimp

14.29. Spyrogimp

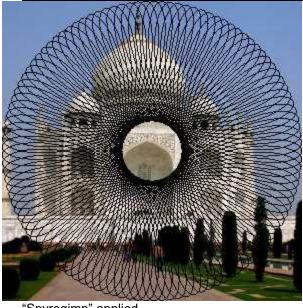
14. Rendering Filters



14.29. Spyrogimp

14.29.1. Overview

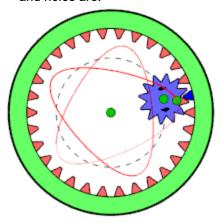
Figure 17.402. Example for the "Spyrogimp" filter



"Spyrogimp" applied

This filter draws Spirographs, Epitrochoids, and Lissajous curves. Immediate feedback is provided, by drawing to a temporary layer.

It reproduces curves drawn by Spirograph© toys. Here is an <u>example from Wikimedia Commons</u> showing what gears and holes are:



Moving gear is inside fixed gear and only one hole is used.

14.29.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Render \rightarrow Spyrogimp....

14.29.3. Selection and Tool

Much of the behavior of the plug-in is determined by options set outside of the plug-in, such as the current selection, or the settings of GIMP's tools. These settings can be changed while the plug-in is running.



Note

In contrast to options within the plug-in, changing the current selection or tool settings will not redraw the pattern. To show the changes, click the Redraw button at the bottom of the plug-in.

14.29.3.1. The Current Selection

As in most plug-ins, the current selection determines the area where the pattern will be rendered. Typically, this would be a rectangular selection. There is however, an additional way the selection can be used.

The selection can be used as the shape of the fixed gear (under the Fixed Gear tab). The plug-in will attempt to extract shapes from the selection, and draw a pattern inside of each shape. This is more interesting if you select a non-rectangular selection.

To have the pattern hug the boundaries of the shapes, use hole percent = 100.

14.29.3.2. Tool Settings

Spyrogimp uses GIMP's tools to perform the drawing. All the settings with which the drawings are done are taken from the chosen tool. For example, if you want to use the Pencil tool (by choosing it from the Tool menu), then all the settings of this tool will be used for drawing. You can change any of the tool settings while the plug-in is running, and press the Redraw button to see how the pattern looks.

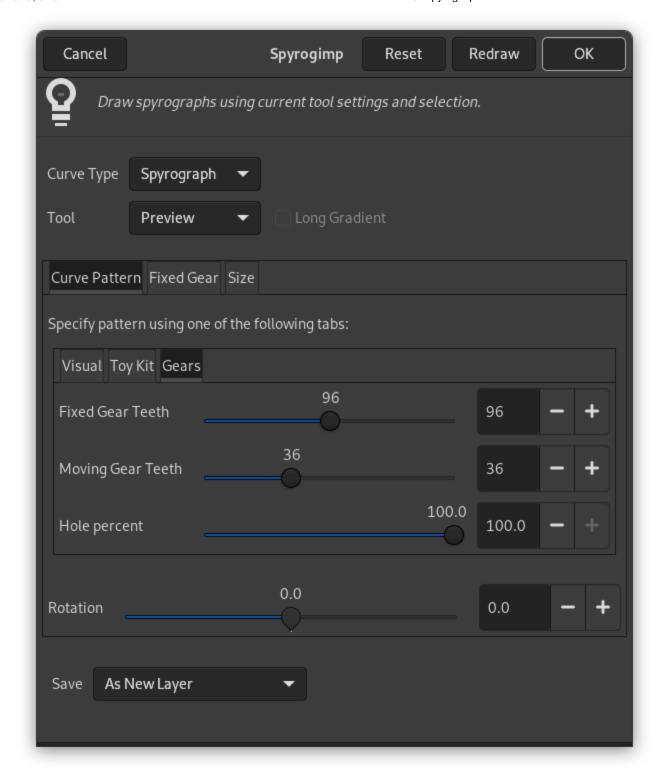
14.29.3.3. Gradient Settings

When using the long gradient mode, some settings from the gradient tool are used.

14.29.4. Options

Most of the options are organized under three tabs: Curve Pattern, Fixed Gear, and Size.

Figure 17.403. "Spyrogimp" options



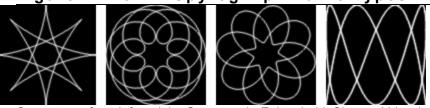
14.29.4.1. Options Above the Tabs

Curve Type

The available curve types are: Spyrograph, Epitrochoid, Sine, and Lissajous. These correspond to physical models for drawing them, using either gears or springs. Spyrograph and Epitrochoid curves are obtained by using two gears - a fixed gear, and a moving gear. A Spyrograph pattern is obtained when the moving gear is rotated inside the fixed gear. When the moving gear is outside the fixed gear, an Epitrochoid pattern is generated. The Sine curve uses the fixed gear, but instead of a moving gear, there is a spring that moves perpendicular to the fixed gear's edge. The Lissajous curve is generated by two springs, which move on the x and y axis. It does not use the fixed ring at all, and thus is not affected by changing it.

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Figure 17.404. "Spyrogimp" Curve Types



Curve types from left to right: Spyrograph, Epitrochoid, Sine and Lissajous.

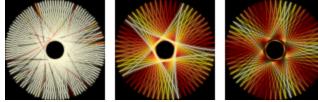
Tool

The GIMP tool with which to draw the pattern. The first tool is named Preview and its purpose is to draw quickly, rather than beautifully - so the pattern can be previewed. The other available tools are: PaintBrush, Pencil, AirBrush, Stroke, Ink, and MyPaintBrush.

Long Gradient

When unchecked, the current tool settings will be used - this can either produce a gradient or not, depending on the tool settings. When checked, the plug-in will produce a long gradient to match the length of the pattern, based on the current gradient, the "Reverse" setting, and the Repeat mode from the gradient tool settings. Setting the Repeat mode to Triangle Wave will produce a pattern that changes continuously, with no abrupt breaks. This is done by using the gradient followed by its reverse. Any other Repeat mode will simply use the gradient from start to finish.

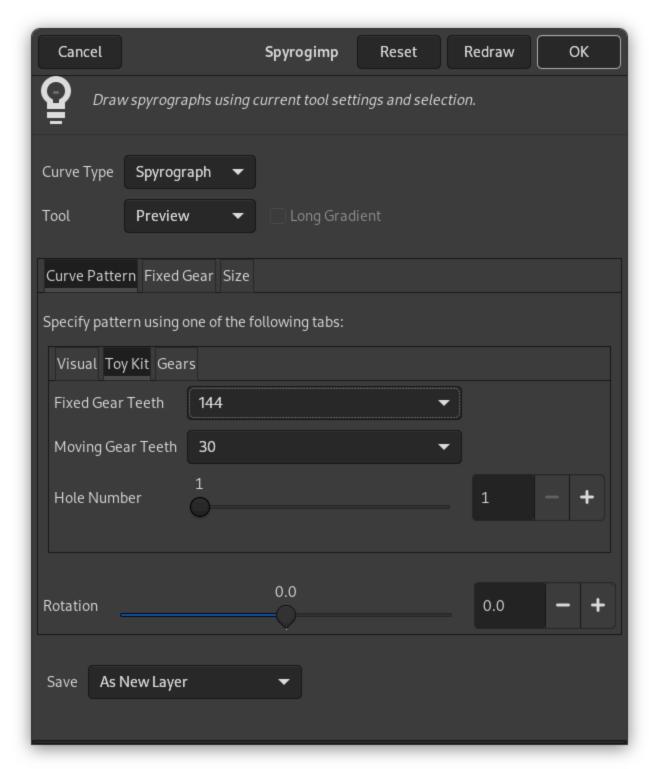
Figure 17.405. "Spyrogimp" Long Gradient Examples



The left image, without Long Gradient, used the paintbrush tool with a gradient. The two right images were generated with the same gradient, but with Long Gradient checked. The right image used the Triangle Wave Repeat mode.

14.29.4.2. Curve Pattern Tab

Figure 17.406. "Spyrogimp" filter options (Curve Pattern)



The inner Toy Kit tab is shown on the right.

Specify a pattern using the Gears, Toy Kit or Visual tabs. The pattern is based only on the settings of the active tab. Toy Kit is similar to Gears, but it uses gears and hole numbers which are found in toy kits. If you follow the instructions from the toy kit manuals, you should obtain similar results.

Fixed Gear Teeth

Number of teeth of fixed gear. The size of the fixed gear is proportional to the number of teeth.

Moving Gear Teeth

Number of teeth of moving gear. The size of the moving gear is proportional to the number of teeth.

Hole percent

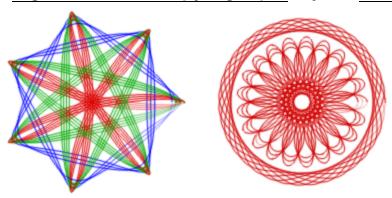
How far is the hole from the center of the moving gear. 100% means that the hole is at the gear's edge.

The Toy Kit tab also has Fixed Gear Teeth and Moving Gear Teeth options. In this case, however, they are limited to gear sizes that are provided with toy kits for drawing Spyrographs.

Hole Number

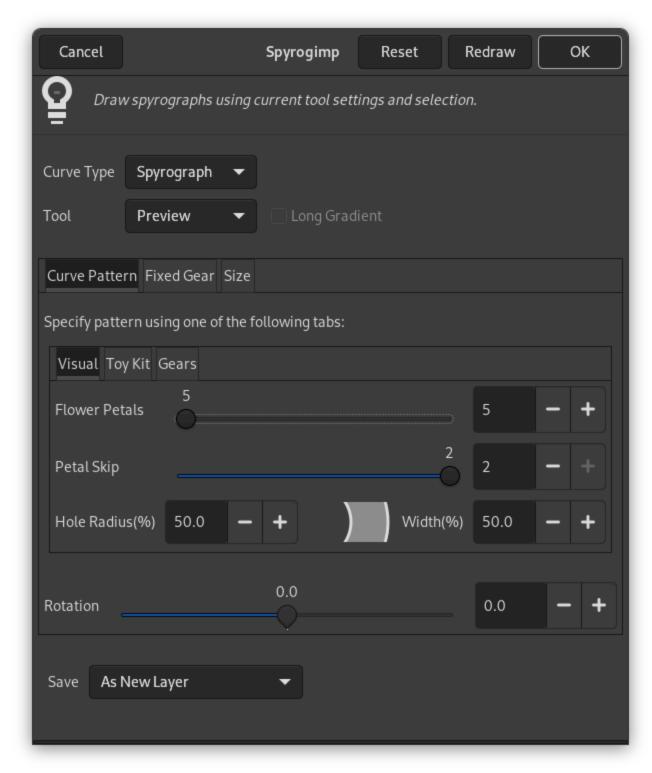
Hole #1 is at the edge of the gear. The maximum hole number is near the center. The maximum hole number is different for each gear.

Figure 17.407. "Spyrogimp" Toy Kit Examples



The Toy Kit helps recreate designs from the toy kit. The left image uses a 105 fixed gear, and a 30 (blue), 45 (green) and 60 (red) moving gears, where each moving gear was used several times with Hole Number varying from 3 to 7. The right image also uses the 105 fixed ring, with moving ring 24 (Hole Number 4), and moving ring 80 (Hole numbers 16, 18, 20).

Figure 17.408. "Spyrogimp" filter options (Curve Pattern)



The Visual tab is shown in the middle on the right side.

The Visual tab creates more rounded, flower petal like patterns. It has the following settings:

Flower Petals

The number of flower petals to draw.

Petal Skip

The number of petals to skip.

Hole radius (%)

The size of the hole.

Width (%)

The width of the drawing.

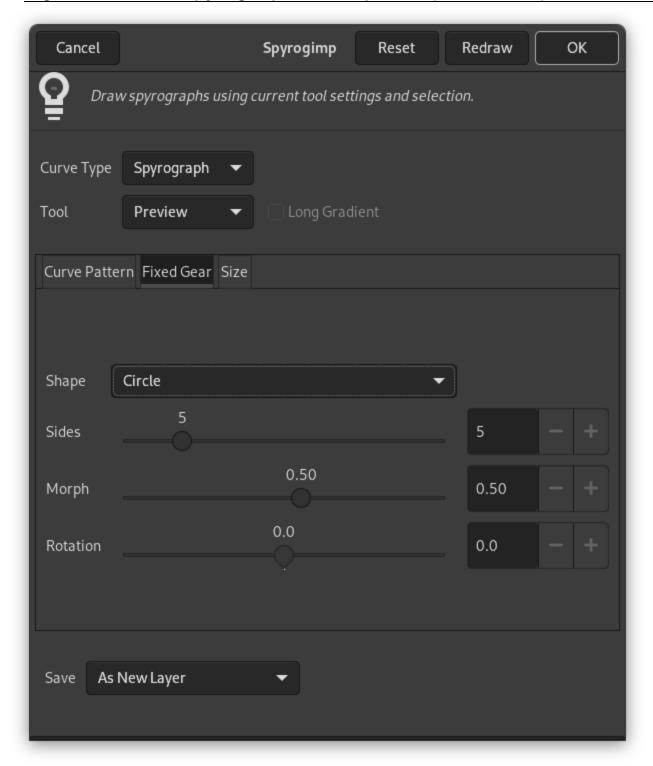
Below the tabs there is an additional option.

Rotation

Rotation of the pattern, in degrees. The starting position of the moving gear in the fixed gear. Note that this also changes the pattern when drawing Lissajous curves.

14.29.4.3. Fixed Gear Tab

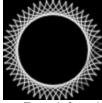
Figure 17.409. "Spyrogimp" filter options (Fixed Gear)

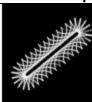


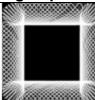
The shape of the fixed gear to be used inside current selection.

- Circle
- Rack is a long round-edged shape provided in the toy kits.
- Frame hugs the boundaries of the rectangular selection, use hole=100 in Gear notation to touch boundary. To generate a narrow frame width, use a small number of teeth for the moving gear.
- Selection will hug boundaries of current selection try something non-rectangular.
- Polygon-Star morphs from an n-sided polygon (morph=0) to an n-sided star (morph=0.3) to a crazy flower (morph=1).
- Sine with morph=0, it is just like a circle, but becomes more wavy as morph increases.
- Bumps morphs from a polygon (morph=0) to a scalloped circle.

Figure 17.410. "Spyrogimp" Shape Examples



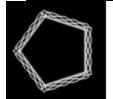






From left to right, Circle, Rack, Frame, and Selection shapes of the fixed gear. The selection in the right image was generated by selecting a large letter "T" that was produced by the text tool.

Figure 17.411. "Spyrogimp" Polygon-Star Shape Examples



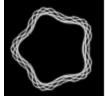






From left to right, Morph = 0, 0.3, 0.6, 1

Figure 17.412. "Spyrogimp" Sine Shape Examples







From left to right, Morph = 0.1, 0.3, 0.5

Figure 17.413. "Spyrogimp" Bumps Shape Examples







From left to right, Morph = 0, 0.5, 1

Sides

Number of sides of the shape.

This applies only to the Polygon-Star, Sine, and Bumps shapes. Otherwise this option is disabled.

Morph

Morph fixed gear shape.

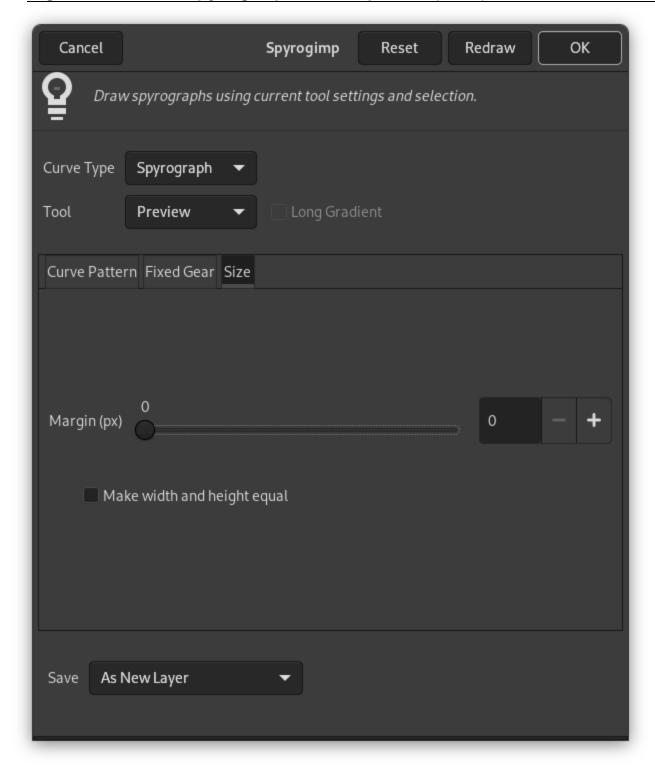
This applies only to the Polygon-Star, Sine, and Bumps shapes. Otherwise this option is disabled.

Rotation

Rotation of the fixed gear, in degrees.

14.29.4.4. Size Tab

Figure 17.414. "Spyrogimp" filter options (Size)



Margin (px)

Margin from the edge of selection. This controls the size of the pattern.

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Make width and height equal

When unchecked, the pattern will fill the current image or selection. When checked, the pattern will have same width and height, and will be centered. The difference between checked and unchecked will only be noticed if the size of the width and height of the selection differ.

14.29.4.5. Common Options Below the Tabs

Save

The Save dropdown determines what will happen to the temporary layer once OK is pressed. Available options are: As New Layer, Redraw on last active layer, and As Path.

14.29.4.6. Buttons

Redraw

If you change the settings of a tool, change color, or change the selection (i.e., any settings outside of the plug-in that affect the pattern), press this to update the preview to see how the pattern looks.

Reset

Resets the dialog to its default settings.

Cancel

Delete the temporary layer, and exit the plug-in.

OK

Render pattern to image.







14.28. Sphere Designer



15. Web Filters

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15. Web Filters



Chapter 17. Filters



15. Web Filters

15.1. Introduction

Web filters are mostly used on images intended for web sites. The filter Image Map is used to add clickable "hot spots" on the image. The filter Semi-Flatten is used to simulate semi-transparency in image formats without alpha channel.

This category describes the following filters:

- Section 15.2, "Image Map"
- Section 15.3, "Semi-Flatten"







14.29. Spyrogimp



15.2. Image Map

15.2. Image Map



15. Web Filters



15.2. Image Map

In Web sensitive images are frequently used to get some effects when defined areas are enabled by the pointer. Obviously the most used effect is a dynamic link to another web page when one of the sensitive areas is clicked on. This "filter" allows you to design easily sensitive areas within an image. Applications for website design have this as a standard function. In GIMP, you can do this in a similar way.

15.2.1. Overview

This plug-in lets you design graphically and friendly all areas you want to delimit over your displayed image. You get the relevant part of html tags that must be merged into the right place in your page html code. You can define some actions linked to these areas too.

This is a complex tool which is not completely described here (it works about like Web page makers offering this function). However we want to describe here some of the most current handlings. If you want, you can find a more complete description in Grokking the GIMP with the link [GROKKING02].

15.2.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Web \rightarrow Image Map.... The window is a small one, but you can magnify it. The main useful areas are:

- completely on the left are vertically displayed icons, one for pointing, three for calling tools to generate various shape areas, one to edit zone properties, and finally one to erase a selected zone; you can call these functions from the Mappings menu,
- just on the right is your working area where you can draw all the shapes areas you want with the relevant tools,
- on the right is displayed an icon vertical set; its use is obvious but a help pop-up gives you some information about each function,
- finally, even on the right is a display area, as a property list of the created areas. A click on one item of the list selects automatically the corresponding shape in the working area.

15.2.3. Options

Figure 17.415. Image Map filter options

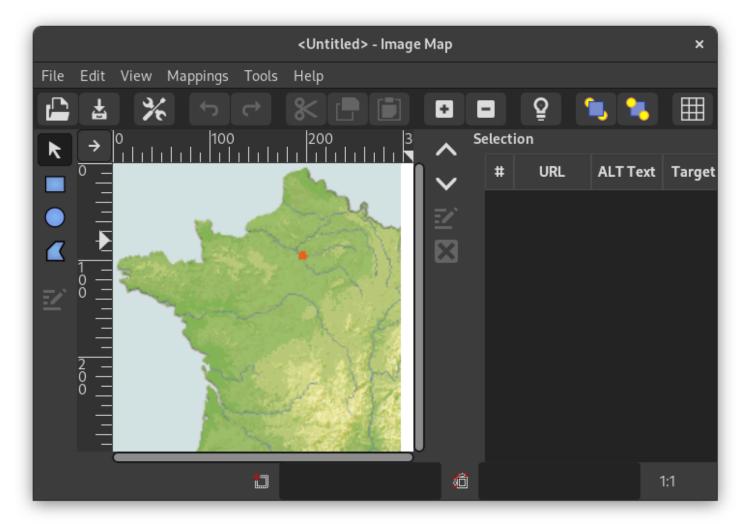


Image map window

15.2.3.1. The Menu Bar

The menu bar is similar to the main menu, only a few menus or menu entries are different:

File

Save, Save As

Contrary to other filters, this plug-in doesn't make an image but a text file. So you must save your work in a text format.



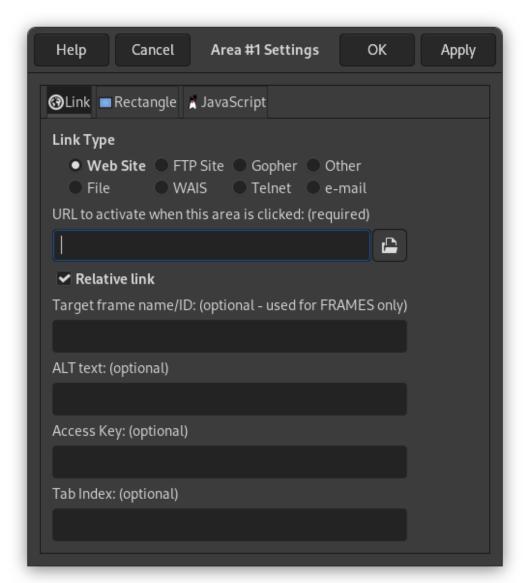
Open, Open recent

In the plug-in you can open the saved text file. The areas defined in your file will be loaded and overdisplayed; if the displayed image is not the original one or not with the same size, GIMP will ask you for adapting the scale.

Edit

Edit area info

Figure 17.416. Editing an image map area



In the settings dialog you can edit the area information of a selected area. This dialog will pop up automatically whenever you create a new area.

View

This menu offers you special functions:

Area List

Here you can hide or show the selection area.

Source...

Here you see the raw data as you would save it to or read it from a file.

Color, Gray

You can select the image mode here and work with a Grayscale display.

Mappings

You will seldom use this menu, since you can more easily access selection tools by clicking on icons on the left of the working area.

Arrow

The arrow here represents the Move tool. When activated tool is selected, you can select and move an area on the image.

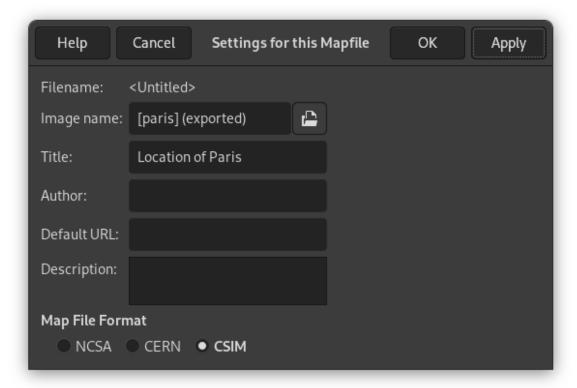
With a polygon, you can use the arrow to move one of the red points. Right-click on a segment between two red points to open a pop-up menu that offers, with several others, the possibility to add a new point. If you right-click on a red point, you can remove it.

Rectangle, Circle, Polygon

These tools let you create various shape areas: click on the image, move the pointer, and click again.

Edit Map Info...

Figure 17.417. Editing the image map data



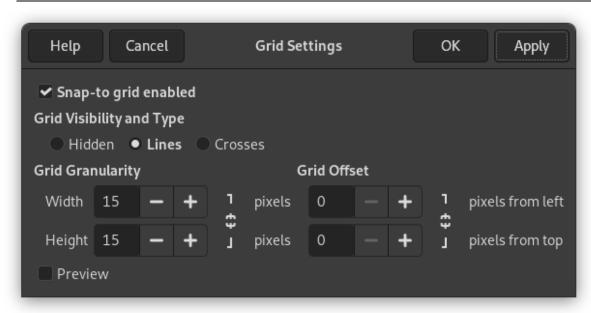
With this simple dialog you can enter some items, which will be written to the resulting output file; either as comments (Author, Description) or as attribute values of the HTML tags (Image name, Title, Default URL).

Tools

With the "Tools" menu you can create guides and even regularly spaced rectangular areas.

Grid, Grid Settings...

Figure 17.418. Grid options



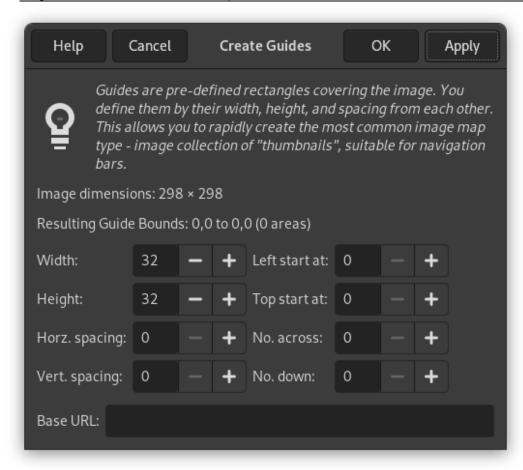
Here you can enable and disable the image grid or configure some grid properties.

Use GIMP Guides..., Create Guides...

The guide lines are created at the border of the image but can be moved around by clicking on the red squares on each line something similar to the GIMP guide lines. By using the guides you are able to create active rectangles in the image.

Create guides

Figure 17.419. Guide options



The guide options

Instead of creating geometrical shapes to select the active areas you may use an array of rectangles, each representing an active area, by clicking on the "Create guides". In the menu popping up you set the width and height of the rectangles, the space between them, the number of rows and columns, and the upper and left startpoint for the array. All measures are in pixels. If you are not satisfied with the result you may adjust each rectangle by moving the red squares as usual.

15.2.3.2. The Tool Bar

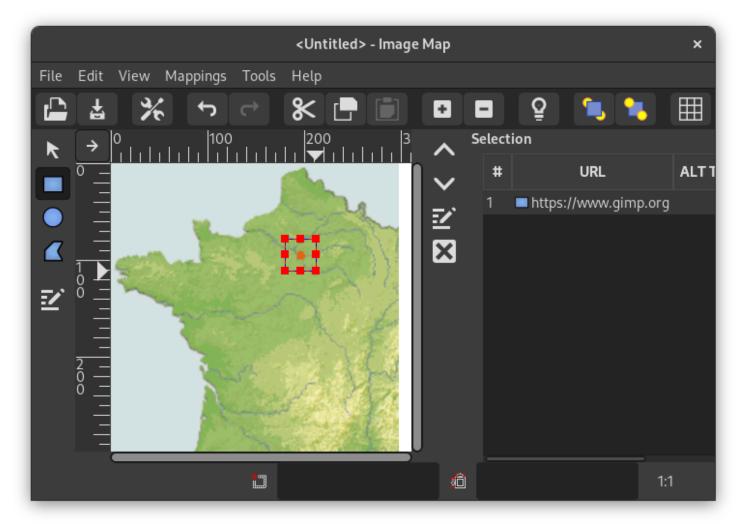
Most entries here are just shortcuts for some functions already described. Exceptions:

Move Area to Front, Move Area to Bottom

Here you can move an area entry to the bottom or top of the area list.

15.2.3.3. The Working Area

Figure 17.420. The Working Area



In the main area of the image map window, on the left side, you will find your working area where you can draw all the shapes areas you want with the relevant tools.

Beside the working area there are vertically displayed icons, one for pointing, three for calling tools to generate various shape areas, one to edit zone properties, and finally one to erase a selected zone; you can call these functions from the Mappings menu too.



Caution

Note that the areas should not overlap.

15.2.3.4. The selection area

On the right is a display area, as a property list of the created areas. A click on one item of the list selects automatically the corresponding shape in the working area, then you can modify it.

Beside the display is an icon vertical set; its use is obvious but a help pop-up gives you some information about each function.

Unfortunately, the arrow symbols for moving a list entry up or down do not work here. But of course you carefully avoided to create overlapping areas, so you do not use these functions at all.



15. Web Filters



15.3. Semi-Flatten

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15.3. Semi-Flatten



15. Web Filters



15.3. Semi-Flatten

15.3.1. Overview

The Semi-flatten filter helps those in need of a solution to anti-aliasing indexed images with transparency. The GIF indexed format supports complete transparency (0 or 255 alpha value), but not semi-transparency (1 - 254): semi-transparent pixels will be transformed to no transparency or complete transparency, ruining anti-aliasing you applied to the logo you want to put onto your Web page.

Before applying the filter, it's essential that you should know the background color of your Web page. Use the color-picker to determine the exact color which pops up as the Foreground color of the Toolbox. Invert FG/BG colors so that BG color is the same as Web background color.

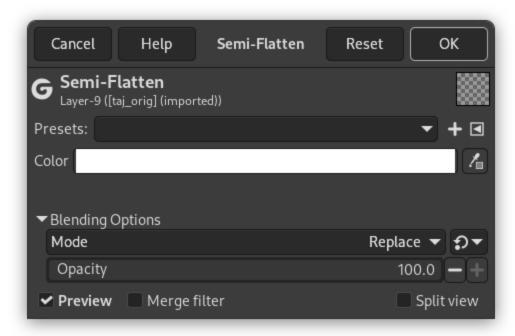
Semi-flatten process will combine FG color to layer (logo) color, proportionally to corresponding alpha values, and will rebuild correct anti-aliasing. Completely transparent pixels will not take the color. Very transparent pixels will take a few color and weakly transparent will take much color.

15.3.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Web \rightarrow Semi-Flatten. It is available if your image holds an Alpha channel (see Section 7.36, "Add Alpha Channel"). Otherwise, it is disabled.

15.3.3. Options

Figure 17.421. "Semi-Flatten" filter options dialog



Presets, "Input Type", Clipping, Blending Options, Preview, Merge filter, Split view

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Note

These options are described in Section 2, "Common Features".

Color

This allows you to change the color that is used by this filter to fill in semi transparent areas. You can click the color bar to select a color, or use the color picker to pick a color from your image.

15.3.4. Example

In the example below, the Toolbox Background color is pink, and the image has feathered edges on a transparent background.

Figure 17.422. Semi-Flatten example



Active background color



At 800% zoom level

Full transparency is kept. Semi-transparent pixels are colored with pink according to their transparency (Alpha value). This image will well merge into the pink background of the new page.

Figure 17.423. Semi-Flatten filter applied



Result, in GIF format, after applying Semi-flatten filter.











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16. Animation Filters



Chapter 17. Filters



16. Animation Filters

16.1. Introduction

Animation filters let you view and optimize your animations (by reducing their size). This category describes the following filters:

- Section 16.2, "Blend"
- Section 16.3, "Burn-In"
- Section 16.4, "Optimize"
 - "Optimize (Difference)", "Optimize (for GIF)" and "Unoptimize" filters are gathered together because they are not much different.
- Section 16.5, "Playback" Section 16.6, "Rippling"
- Section 16.7, "Spinning Globe"
- Section 16.8, "Waves"







15.3. Semi-Flatten



16.2. Blend

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16.2. Blend





16.2. Blend

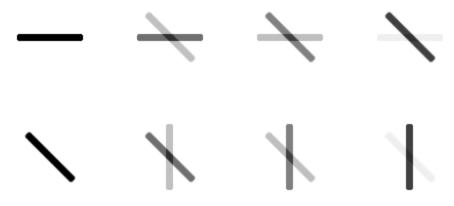
16.2.1. Overview

Figure 17.424. Example for the "Blend" filter: original image



4 frames of 5 frames (white background layer omitted)

Figure 17.425. Example for the "Blend" filter: filter applied



First 8 (of 16) frames

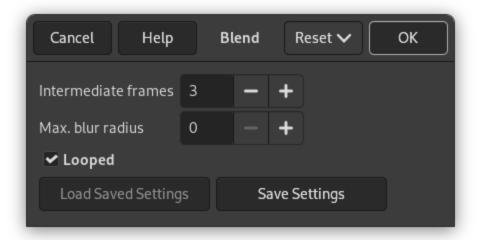
16.2.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Animation \rightarrow Blend....

16.2.3. Options

Figure 17.426. "Blend" options

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Intermediate frames Max. blur radius Looped



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16.3. Burn-In

16. Animation Filters



16.3. Burn-In

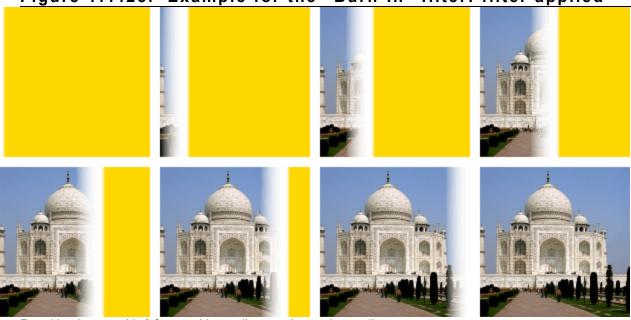
16.3.1. Overview

Figure 17.427. Example for the "Burn-In" filter: original image



Opaque background layer and foreground layer with transparency

Figure 17.428. Example for the "Burn-In" filter: filter applied



Resulting image with 8 frames (depending on size and speed)

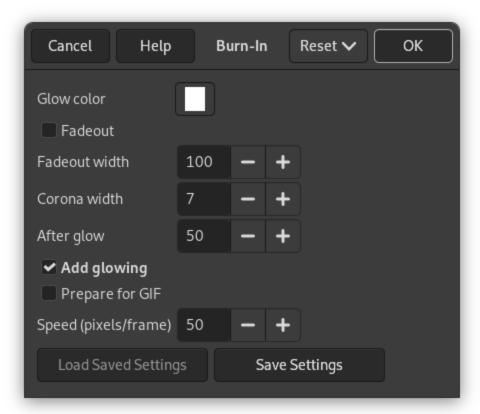
16.3.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Animation \rightarrow Burn-In....

16.3.3. Options

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Figure 17.429. "Burn-In" options



Glow color

Fadeout

Fadeout width

Corona width

After glow

Add glowing

Prepare for GIF

Speed (pixels/frame)



3/29/25, 9:51 PM 16.4. Optimize

16.4. Optimize



16. Animation Filters



16.4. Optimize

16.4.1. Overview

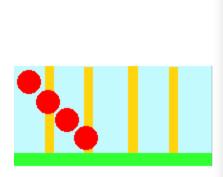
An animation can contain several layers and so its size can be important. This is annoying for a Web page. The Optimize filters let you reduce this size. Many elements are shared by all layers in an animation; so they can be saved only once instead of being saved in all layers, and what has changed in each layer can be saved only. GIMP offers two Optimize filters: Optimize (Difference) and Optimize (GIF). Their result doesn't look very different.

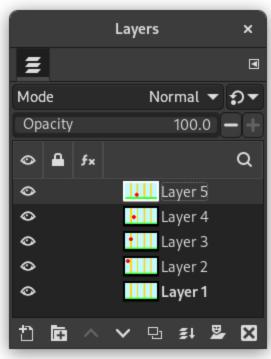
16.4.2. Activating the Filters

You can find these filters in the main menu:

- Filters → Animation → Optimize (Difference)
- Filters → Animation → Optimize (for GIF)
- Filters → Animation → Unoptimize

16.4.3. Example for the Optimize animation filters

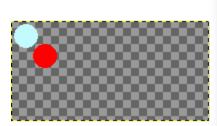


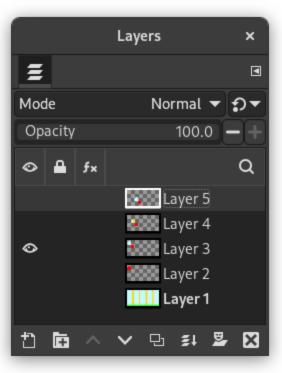


Original image

In this animation, the red ball goes downwards and past vertical bars. File size is 600 kB.

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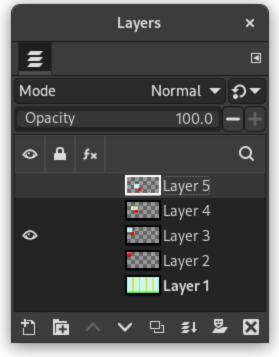




Optimize (Difference)

File size moved to 153 kB. Layers held only the part the background which will be used to remove the trace of the red ball. The common part of layers is transparent.





Optimize (GIF)

File size moved to 154 kB, a bit bigger in the present example, but layer size has been reduced. Layers held only a rectangular selection which includes the part of the background which will be used to remove the trace of the red ball. The common part of layers is transparent.

16.4.4. Unoptimize

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The "Unoptimize" filter removes any optimizations on a layer-based animation. You may need this command if you want to edit the animation and it's not possible or not useful to <u>undo</u> any changes and start editing from the original image.

+

16.3. Burn-In

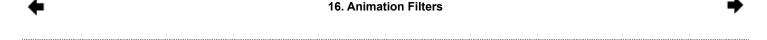




16.5. Playback

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16.5. Playback



16.5. Playback

16.5.1. Overview

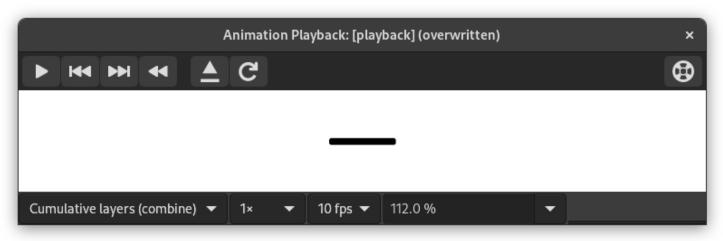
This plug-in lets you play an animation from a multi-layers image (that could be saved in the GIF, MNG or even XCF format), to test it.

16.5.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Animation \rightarrow Playback....

16.5.3. Options

Figure 17.430. "Playback" filter options



This dialog has:

Preview

This preview of the animation automatically fits the frame size. The number of the displayed frame is shown below the preview.

Buttons

The following buttons are available above the preview:

Start playback/Stop playback

This plays or stops the animation.

Step back to previous frame

This plays the animation backwards step by step.

Step to next frame

This plays the animation step by step.

Rewind the animation

This rewinds the animation to the beginning.

Detach the animation from the dialog window

This detaches the animation from the window.

Reload the image

This loads the animation again, useful if changes have been done.

Drop-down lists

The following drop-down lists are available under the preview:

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Combine/Replace layers

This can be Cumulative layers (combine) to show all frames so far on top of each other, or One frame per layer (replace) to show only the last frame.

Playback speed

This allows you to set the speed of the animation.

Default framerate

This allows you to set the number of frames per second used when playing the animation.

Zoom

This allows you to set the zoom level of the animation.



3/29/25, 9:51 PM 16.6. Rippling

16.6. Rippling

16. Animation Filters



16.6. Rippling

16.6.1. Overview

Figure 17.431. Example for the "Rippling" filter



Original image



A "Rippled" frame

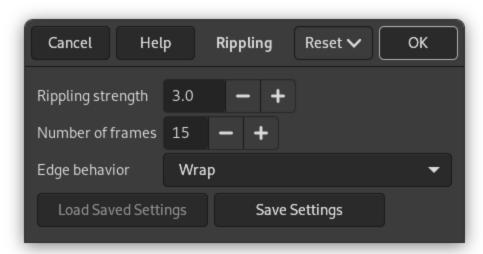
16.6.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Animation \rightarrow Rippling....

3/29/25, 9:51 PM 16.6. Rippling

16.6.3. Options

Figure 17.432. "Rippling" options



Rippling strength Number of frames Edge behavior



16.7. Spinning Globe

16. Animation Filters



16.7. Spinning Globe

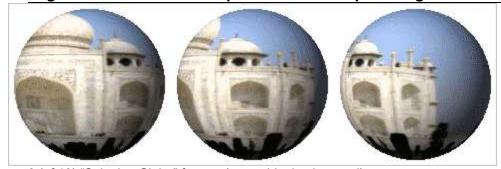
16.7.1. Overview

Figure 17.433. Example for the "Spinning Globe" filter: original image



Original image

Figure 17.434. Example for the "Spinning Globe" filter: filter applied



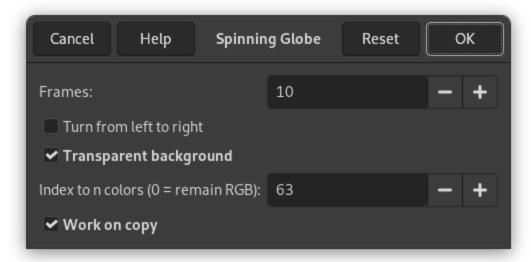
3 (of 10) "Spinning Globe" frames (on a white background)

16.7.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Animation \rightarrow Spinning Globe....

16.7.3. Options

Figure 17.435. "Spinning Globe" options



Frames
Turn from left to right
Transparent background
Index to n colors
Work on copy



3/29/25, 9:52 PM 16.8. Waves

16.8. Waves

16. Animation Filters



16.8. Waves

16.8.1. Overview

Figure 17.436. Example for the "Waves" filter



Original image



A "Wave" frame

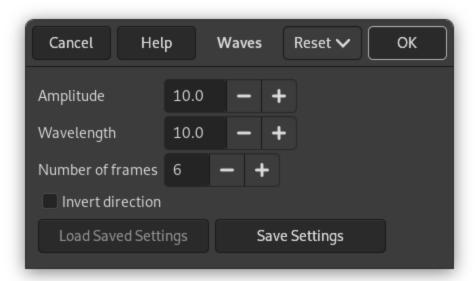
16.8.2. Activating the Filter

This filter is found in the main menu under Filters \rightarrow Animation \rightarrow Waves....

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16.8.3. Options

Figure 17.437. "Waves" options



Amplitude
Wavelength
Number of frames
Invert direction







16.7. Spinning Globe



Keys and Mouse Reference

Keys and Mouse Reference





Keys and Mouse Reference

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Zoom tool — Key reference for the Zoom tool



16.8. Waves





File

File

File



Keys and Mouse Reference



Name

File — Key reference for the File menu

File

- Ctrl + N
- New image
- Shift + Ctrl + V
 - Create From Clipboard
- Ctrl + O
 - Open image
- Ctrl + Alt + O
 - Open image as layers
- Ctrl + 1
 - Open recent image #1
- Ctrl + 2
 - Open recent image #2
- **Ctrl** + 3
 - Open recent image #3
- Ctrl + 4
 - Open recent image #4
- Ctrl + 5
 - Open recent image #5
- Ctrl + 6
 - Open recent image #6
- **Ctrl** + 7
 - Open recent image #7
- Ctrl + 8
 - Open recent image #8
- Ctrl + 9
 - Open recent image #9
- | Ctrl | + 0
 - Open recent image #10
- Ctrl + S
 - Save the XCF image
- Shift + Ctrl + S
 - Save image with a different name
- Ctrl + E
 - Export
- Shift + Ctrl + E
 - Export As...: save image to various file formats
- Ctrl + P
 - Print...
- Ctrl + Alt + F
 - Show image in file manager
- Ctrl + W
 - Close Window

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•



Keys and Mouse Reference



<u>Edit</u>

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Edit



Keys and Mouse Reference



Name

Edit — Key reference for Edit menu

Edit

Undo/redo

Ctrl + Z

Undo

Ctrl + Y Redo

Clipboard

Ctrl + C

Copy selection



Note

This places a copy of the selection to the GIMP clipboard.

Ctrl | Shift | + C

Copy visible

Ctrl + X

Cut selection

Ctrl + V

Paste clipboard



Note

This places the clipboard objects as a floating selection.

Ctrl + Alt + V

Paste in place

Ctrl + Shift + V

Paste as new image

Fill

Del

Erase selection

Ctrl +

Fill with FG Color

Ctrl + .

Fill with BG Color

Ctrl +;

Fill with Pattern

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<u>File</u>

1

Select

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Select



Keys and Mouse Reference



Name

Select — Key reference for Select menu

Selections

Ctrl + T
Toggle selections

Ctrl + A

Select all

Shift + Ctrl + A Select none

Ctrl + I

Invert selection

Shift + Ctrl + L Float selection

Shift + O

Select by color

Shift + V

Path to selection

Shift + Q

Toggle Quick Mask











<u>Viev</u>

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View



Keys and Mouse Reference



Name

View — Key reference for View menu

View

Window

F10

Main Menu

Shift + F10, right click
Drop-down Menu

F11

Toggle fullscreen

Tab

Toggle the visibility of toolbox and dialogs docks

Shift + Q

Toggle quick Mask

Ctrl + T

Toggle selection outline visibility

Ctrl + W

Close document window

Shift + J

Center image in window

Shift + Ctrl + J

Fit image in window



Note

Menus can also be activated by Alt with the letter underscored in the menu name.

Zoom

Zoom in

Zoom out

Ί

Zoom 1:1

Ctrl + J

Shrink wrap



Note

This fits the window to the image size.

+ mouse wheel Zoom

3/29/25, 9:53 PM View

Flip and Rotate (0°)

!

Reset Flip and Rotate

Scrolling (panning)

arrows

Scroll canvas

middle button drag

Scroll canvas

mouse wheel

Scroll canvas vertically

Shift + mouse wheel

Scroll canvas horizontally



Note

Scrolling by keys is accelerated, i.e. it speeds up when you press Shift+arrows, or jumps to the borders with Ctrl+arrows.

Rulers and Guides

Mouse drag

Drag off the horizontal or vertical ruler to create a new guide line. Drag a line onto the ruler to delete it.

Ctrl + mouse drag

Drag a sample point out of the rulers

Shift + Ctrl + R

Toggle rulers

Shift + Ctrl + T

Toggle guides







Select

3/29/25, 9:53 PM Image

Image



Keys and Mouse Reference



Name

Image — Key reference for Image menu

Image

Ctrl + D
Duplicate image

Ctrl + M
Merge visible layers

Alt + Return

Image properties

♦

View

Layers

3/29/25, 9:54 PM Layers

Layers



Keys and Mouse Reference



Name

Layer — Key reference for Layer menu

Layers

Shift + Ctrl + N

New layer

Shift + Ctrl + D
Duplicate layers

Page Up

Select the layers above

Page Down

Select the layers below

Home

Select the first layer

End

Select the last layer

Ctrl + M

Merge visible layers

Ctrl + H

Anchor layer

Shift + Ctrl + N

Transform, Offset: shift the pixels in the layer



<u>Image</u>



3/29/25, 9:54 PM Tools

Tools



Keys and Mouse Reference



Name

Tools — Key reference for the Tools menu

Tools

Select Tools

```
R Rectangle Select

E Ellipse Select

F Free Select

U Fuzzy Select

Shift + O Select By Color

I Scissors Select
```

Paint Tools

```
Shift + B
      Bucket Fill
G
      Gradient
Ν
      Pencil
Ρ
      Paintbrush
Shift + E
      Eraser
Α
      Airbrush
Κ
      Ink
Υ
      MyPaint Brush
С
      Clone
Н
      Heal
Shift + U
      Blur/Sharpen
S
      Smudge
```

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Shift + D Dodge/Burn

Transform Tools

Q

Alignment

Μ

Move

Shift + C

Crop

Shift + R

Rotate

Shift + S

Scale

Shift + H

Shear

Shift + P

Perspective

Shift + W

3D Transform

Shift + T

Unified Transform

Shift + L

Handle Transform

Shift + F

Flip

Shift + G

Cage Transform

W

Warp Transform

Other Tools

В

Paths

T

Text

0

Color Picker

Shift + M

Measure

Ζ

Zoom

The Zoom tool has some specific reference keys: see **Zoom tool**.



Note

Click on a tool icon to open its Tool Options dialog.

Context

Ctrl + B Toolbox

D

3/29/25, 9:54 PM Tools

Default Colors

Χ

Swap Colors



Note

Click on the colors to change the colors.







<u>Layers</u>



<u>Filters</u>

3/29/25, 9:54 PM Filters

Filters



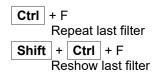
Keys and Mouse Reference



Name

Filters — Key reference for Filters menu

Filters









Tools



Windows

3/29/25, 9:54 PM Windows

Windows



Keys and Mouse Reference



Name

Windows — Key reference for Windows menu

Dockable Dialogs



Note

These open a new dialog window if it isn't open yet, otherwise the corresponding dialog gets focus.

Within a Dialog

Enter

Set the new value

Space, Enter

Activate current button or list

Within a multi-tab dialog

Within a File Dialog

Miscellaneous items

3/29/25, 9:54 PM Windows

+ B
Raise the Toolbox

Tab

Toggle between showing and hiding Docks



3/29/25, 9:54 PM Help

Help



Keys and Mouse Reference



Name

Help — Key reference for Help menu

Help

```
F1
Help
Shift + F1
Context Help

/
Search and run a command
```



3/29/25, 9:55 PM Zoom tool

Zoom tool



Keys and Mouse Reference



Name

Zoom tool — Key reference for the Zoom tool

Zoom tool

click

Zoom in

Ctrl + click

Zoom out

mouse drag

Zoom in inside the area

Ctrl + mouse drag

Zoom out inside the area



Help





Glossary

Glossary





Glossary

Alpha

An Alpha value indicates the transparency of a pixel. Besides its Red, Green and Blue values, a pixel has an alpha value. The smaller the alpha value of a pixel, the more visible the colors below it. A pixel with an alpha value of 0 is completely transparent. A pixel with an alpha value of 255 is fully opaque.

With some image <u>file formats</u>, you can only specify that a pixel is completely transparent or completely opaque. Other file formats allow a variable level of transparency.

Alpha Channel

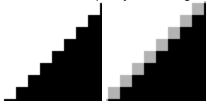
An alpha <u>channel</u> of a layer is a grayscale image of the same size as the layer representing its transparency. For each pixel the gray level (a value between 0 and 255) represents the pixels's <u>Alpha</u> value. An alpha channel can make areas of the layer to appear partially transparent. That's why the background layer has no alpha channel by default.

The image alpha channel, which is displayed in the Channels dialog, can be considered as the alpha channel of the final layer when all layers have been merged.

See also Example for Alpha channel.

Antialiasing

Antialiasing is the process of reversing an alias, that is, reducing the "jaggies". Antialiasing produces smoother curves by adjusting the boundary between the background and the pixel region that is being antialiased. Generally, pixel intensities or opacities are changed so that a smoother transition to the background is achieved. With selections, the opacity of the edge of the selection is appropriately reduced.



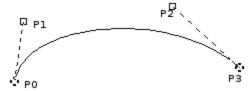
Bézier curve

A spline is a curve which is defined mathematically and has a set of control points. A Bézier spline is a cubic spline which has four control points, where the first and last control points (knots or anchors) are the endpoints of the curve and the inner two control points (handles) determine the direction of the curve at the endpoints.

In the non-mathematical sense, a spline is a flexible strip of wood or metal used for drawing curves. Using this type of spline for drawing curves dates back to shipbuilding, where weights were hung on splines to bend them. The outer control points of a Bézier spline are similar to the places where the splines are fastened down and the inner control points are where weights are attached to modify the curve.

Bézier splines are only one way of mathematically representing curves. They were developed in the 1960s by Pierre Bézier, who worked for Renault.

Bézier curves are used in GIMP as component parts of Paths.



The image above shows a Bézier curve. Points P0 and P3 are points on the Path, which are created by clicking with the mouse. Points P1 and P2 are handles, which are automatically created by GIMP when you stretch the line.

Bitmap

From The Free Online Dictionary of Computing (13 Mar 01):

bitmap — A data file or structure which corresponds bit for bit with an image displayed on a screen, probably in the same format as it would be stored in the display's video memory or maybe as a device independent bitmap. A bitmap is characterized by the width and height of the image in pixels and the number of bits per pixel which determines the number of shades of gray or colors it can represent. A bitmap representing a colored image (a "pixmap") will usually have pixels with between one and eight

bits for each of the red, green, and blue components, though other color encodings are also used. The green component sometimes has more bits than the other two to cater for the human eye's greater discrimination in this component.

BMP

BMP is an uncompressed image <u>file format</u> designed by Microsoft and mainly used in Windows. Colors are typically represented in 1, 4 or 8 bits, although the format also supports more. Because it is not compressed and the files are large, it is not very well suited for use in the internet.

Bump mapping

in the geometry of the model.

Bump mapping is a technique for displaying extremely detailed objects without increasing the geometrical complexity of the objects. It is especially used in 3-dimensional visualization programs. The trick is to put all the necessary information into a texture, with which shadowing is shown on the surface of the object. Bump mapping is only one (very effective) way of simulating surface irregularities which are not actually contained

Channel

A channel refers to a certain component of an image. For instance, the components of an <u>RGB</u> image are the three primary colors red, green, blue, and sometimes transparency (alpha).

Every channel is a grayscale image of exactly the same size as the image and, consequently, consists of the same number of pixels. Every pixel of this grayscale image can be regarded as a container which can be filled with a value ranging from 0 to 255. The exact meaning of this value depends on the type of channel, e.g. in the RGB color model the value in the *R*-channel means the amount of red which is added to the color of the different pixels; in the selection channel, the value denotes how strongly the pixels are selected; and in the alpha channel the values denote how opaque the corresponding pixels are. See also Channels.

Channel encoding

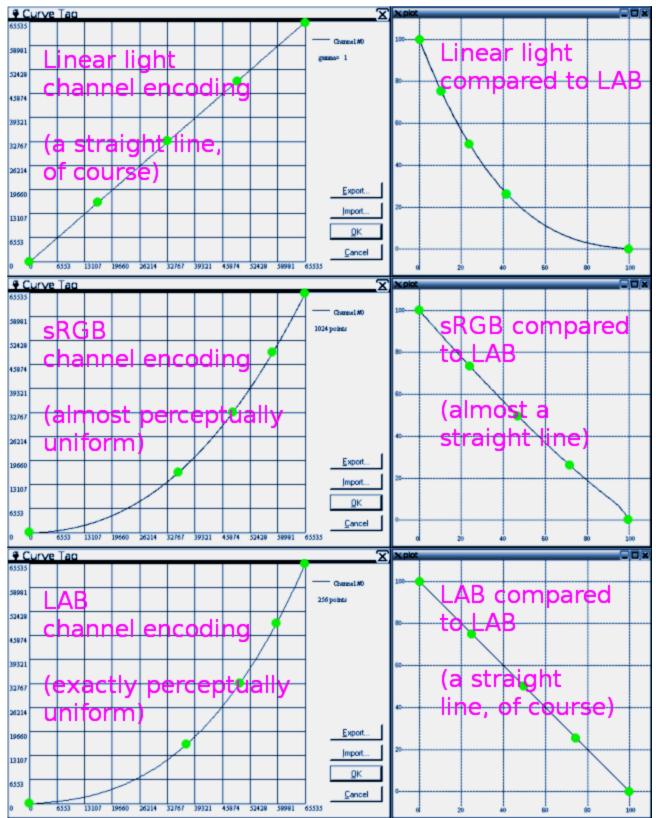
Channel encoding refers to how fast the intensity (more technically correct for grayscale and RGB images, the <u>relative Luminance</u>) of a channel in a digital image progresses from dark to light as the channel values progress from 0.0 to 1.0 floating point (0 to 255 for 8-bit integer, 0 to 65535 for 16-bit integer).

Other ways of referring to "channel encoding" include "companding curve", "gamma" (which is technically not correct unless the channel encoding is an actual gamma curve), "tone reproduction curve" ("TRC" for short), and "tone response curve" (also "TRC" for short).

The linear light channel encoding reflects the way lightwaves combine there in the real world. The linear light channel encoding is also referred to as "gamma=1.0", "linear gamma" or simply "linear".

Perceptually uniform channel encodings reflects the way our eyes respond to changes in luminance. In ICC profile color managed workflows, the following channel encodings are commonly used:

- 1. The LAB companding curve, which is exactly perceptually uniform.
- 2. The linear light channel encoding, which of course is exactly linear.
- 3. The sRGB channel encoding and the "gamma=2.2" channel encoding, which are both approximately perceptually uniform and approximately equal to each other.
- 4. The "gamma=1.8" channel encoding, which is neither linear nor approximately perceptually uniform, though it's closer to being perceptually uniform than it is to being linear.



The Linear light, sRGB, and LAB channel encodings compared. Looking at the above image:

- 1. The Linear light channel encoding (top row) represents how lightwaves combine out there in the real world.
- 2. The sRGB channel (non-linear) encoding (middle row) is almost perceptually uniform.
- 3. The LAB channel encoding (bottom row) is exactly perceptually uniform, which means it represents how our eyes respond to changes in luminance.

Two different channel encodings are used internally in GIMP for various editing operations, these being "Linear light" and "Non-linear" (previously known as Perceptual gamma (sRGB)).

The companding-curves-compared.png shown above is a slightly modified version of an image from <u>Completely Painless Programmer's Guide to XYZ, RGB, ICC, xyY, and TRCs</u>, which is licensed as <u>Creative Commons</u>
Attribution-ShareAlike 3.0 Unported License.

Channel Mask

A channel mask is a special type of mask which determines the transparency of a selection. See <u>Masks</u> for a detailed description.

Clipboard

The Clipboard is a temporary area of memory which is used to transfer data between applications or documents. It is used when you Cut, Copy or Paste data in GIMP.

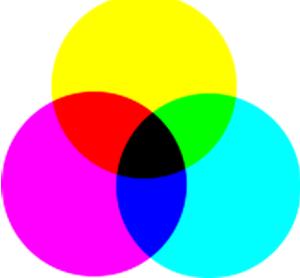
The clipboard is implemented slightly differently under different operating systems. Under Linux/XFree, GIMP uses the XFree clipboard for text and the GIMP internal image clipboard for transferring images between image documents. Under other operating systems, the clipboard may work somewhat differently. See the GIMP documentation for your operating system for further information.

The basic operations provided by the clipboard are "Cut", "Copy", and "Paste". Cut means that the item is removed from the document and copied to the clipboard. Copy leaves the item in the document and copies it to the clipboard. Paste copies the contents of the clipboard to the document. GIMP makes an intelligent decision about what to paste depending upon the target. If the target is a canvas, the Paste operation uses the image clipboard. If the target is a text entry box, the paste operation uses the text clipboard.

CMY, CMYK

CMYK is a <u>color model</u> which has components for Cyan, Magenta, Yellow and Black. It is a subtractive color model, and that fact is important when an image is printed. It is complementary to the <u>RGB</u> color model. The values of the individual colors vary between 0% and 100%, where 0% corresponds to an unprinted color, and 100% corresponds to a completely printed area of color. Colors are formed by mixing the three basic colors. The last of these values, K (Black), doesn't contribute to the color, but merely serves to darken the other colors. The letter K is used for Black to prevent confusion, since B usually stands for Blue.





GIMP does not currently support the CMYK model. (An experimental plug-in providing rudimentary CMYK support can be found [PLUGIN-SEPARATE].)

This is the mode used in printing. These are the colors in the ink cartridges in your printer. It is the mode used in painting and in all the objects around us, where light is reflected, not emitted. Objects absorb part of the light waves and we see only the reflected part. Note that the cones in our eyes see this reflected light in RGB mode. An object appears Red because Green and Blue have been absorbed. Since the combination of Green and Blue is Cyan, Cyan is absorbed when you add Red. Conversely, if you add Cyan, its complementary color, Red, is absorbed. This system is *subtractive*. If you add Yellow, you decrease Blue, and if you add Magenta, you decrease Green. It would be logical to think that by mixing Cyan, Magenta and Yellow, you would subtract Red, Green and Blue, and the eye would see no light at all, that is, Black. But the question is more complex. In fact, you would see a dark brown. That is why this mode also has a Black value, and why your printer has a Black cartridge. It is less expensive that way. The printer doesn't have to mix the other three colors to create an imperfect Black, it just has to add Black.

Color

On the one hand, <u>light</u> comes from the sun or other radiant sources, and is <u>refracted</u> by mediums (water, the atmosphere, glass) and <u>diffusely or specularly</u> reflected by surfaces.

On the other hand, <u>color</u> isn't out there in the world in the same tangible way that light is. Rather color is part of how we sense the world around us. Light enters the eyes, is processed by light receptors (<u>cones</u> and <u>rods</u>), and sent via the optic nerves to the brain for further processing and interpretation.

Light varies in <u>wavelengths</u>, which our eyes and brain interpret as varying hues (reds, blues, greens, and so on), and also in <u>intensity (aka "luminance")</u>. So our <u>perception of color</u> is composed of both intensity ("luminance") information and chromaticity information.

The <u>naming of colors</u> carries one out of the narrow realm of color perception, and into the larger realm of cultural and linguistic interpretation and classification of color, and thence into even larger philosophical, aesthetic, theological, and metaphysical considerations.

The above explanation of Color is a slightly modified excerpt from the <u>Completely Painless Programmer's Guide to XYZ, RGB, ICC, xyY, and TRCs</u>, which is licensed as <u>Creative Commons Attribution-ShareAlike 3.0 Unported License</u>.

Color depth

Color depth is simply the number of bits used to represent a color (bits per pixel: bpp). There are 3 channels for a pixel (for Red, Green and Blue). GIMP can support 8 bits per channel, referred as *eight-bit color*. So, GIMP color depth is 8 * 3 = 24, which allows 256 * 256 * 256 = 16,777,216 possible colors (8 bits allow 256 colors).

Color model

A color model is a way of describing and specifying a color. The term is often used loosely to refer to both a color space system and the color space on which it is based.

A color space is a set of colors which can be displayed or recognized by an input or output device (such as a scanner, monitor, printer, etc.). The colors of a color space are specified as values in a color space system, which is a coordinate system in which the individual colors are described by coordinate values on various axes. Because of the structure of the human eye, there are three axes in color spaces which are intended for human observers. The practical application of that is that colors are specified with three components (with a few exceptions). There are about 30 to 40 color space systems in use. Some important examples are:

- RGB
- HSV
- <u>CMY(K)</u>
- YUV
- YCbCr

Display-referred

The phrase "display-referred" refers to images that can be displayed (either directly or by means of ICC profile color management) on devices. The displaying device might be a monitor, or an image printed on paper, or some other display technology.

Regardless of the technology, when you display an image on a device, that device has a maximum and minimum brightness. The maximum and minimum brightnesses are referred to as <u>display-referred white</u> and <u>display-referred black</u>.

The above explanation is a slightly modified excerpt from <u>Models for image editing: Display-referred and scene-referred</u>. The modified excerpt was written and quoted by permission of the author, who has licensed the modified excerpt under the Creative Commons Attribution-ShareAlike 3.0 Unported License.

Display-referred black

"Display-referred black" (or for simplicity, "black") means the floating point RGB color (0.0, 0.0, 0.0) and its integer equivalents. This color has the very special significance that there's no such thing as "less bright than black". So in display-referred image editing, all RGB channel values are greater than or equal to 0.0 and no color is less bright than "black", (0.0, 0.0, 0.0).

The above explanation is a slightly modified excerpt from <u>Models for image editing: Display-referred and scene-referred</u>. The modified excerpt was written and quoted by permission of the author, who has licensed the modified excerpt under the <u>Creative Commons Attribution-ShareAlike 3.0 Unported License</u>.

Display-referred white

"Display-referred white" (or for simplicity, "white") means the floating point RGB color (1.0, 1.0, 1.0) and the integer equivalents (255,255,255),(65535,65535,65535), etc, for 8-bit integer, 16-bit integer, etc.

"Display-referred white" has the very special significance that in display-referred editing there's no such thing as "brighter than white". So in display-referred image editing, all RGB channel values are less than or equal to 1.0 and no color is brighter than "white", (1.0, 1.0, 1.0).

The above explanation is a slightly modified excerpt from <u>Models for image editing: Display-referred and scene-referred</u>. The modified excerpt was written and quoted by permission of the author, who has licensed the modified excerpt under the Creative Commons Attribution-ShareAlike 3.0 Unported License.

Dithering

Dithering is a technique used in computer graphics to create the illusion of more colors when displaying an image which has a low <u>color depth</u>. In a dithered image, the missing colors are reproduced by a certain arrangement of

pixels in the available colors. The human eye perceives this as a mixture of the individual colors.

The <u>Gradient tool</u> uses dithering. You may also choose to use dithering when you convert an image to <u>Indexed</u> format. If you are working on an image with indexed colors, some tools (such as the pattern fill tool) may also use dithering, if the correct color is not available in the colormap.

The <u>Newsprint</u> filter uses dithering as well. You can use the <u>NL Filter</u> (Non Linear filter) to remove unwanted dithering noise from your image.

Also note that although GIMP itself uses 24-bit colors, your system may not actually be able to display that many colors. If it doesn't, then the software in between GIMP and your system may also dither colors while displaying them.

See also the glossary entry on Floyd-Steinberg dithering, which is used in GIMP.

EXIF

Exchangeable image file format (official abbreviation Exif, not EXIF) is a specification for the image file format used by digital cameras. It was created by the Japan Electronic Industry Development Association (JEIDA). The specification uses the existing JPEG, TIFF Rev. 6.0, and RIFF WAVE file formats, with the addition of specific metadata tags. It is not supported in JPEG 2000 or PNG. Version 2.1 of the specification is dated June 12, 1998 and version 2.2 is dated April 2002. The Exif tag structure is taken from that of TIFF files. There is a large overlap between the tags defined in the TIFF, Exif, TIFF/EP and DCF standards [WKPD-EXIF].

Feathering

The process of Feathering makes a smooth transition between a region and the background by softly blending the edges of the region.



In GIMP, you can feather the edges of a selection. Brushes can also have feathered edges.

File Format

A file format or file type is the form in which computer data is stored. Since a file is stored by an operating system as a linear series of bytes, which cannot describe many kinds of real data in an obvious way, conventions have been developed for interpreting the information as representations of complex data. All of the conventions for a particular "kind" of file constitute a file format.

Some typical file formats for saving images are JPEG, TIFF, PNG and GIF. The best file format for saving an image depends upon how the image is intended to be used. For example, if the image is intended for the internet, file size is a very important factor, and if the image is intended to be printed, high resolution and quality have greater significance. See Format types.

Floating Selection

A floating selection (sometimes called a "floating layer") is a type of temporary layer which is similar in function to a normal layer, except that a floating selection must be <u>anchored</u> before you can resume working on any other layers in the image.

Floating selections are described in Section 4.5, "Float".

In early versions of GIMP, floating selections were used for performing operations on a limited part of an image. You can do that more easily now with layers, but you can still use this way of working with images.

Floyd-Steinberg Dithering

Floyd-Steinberg dithering is a method of <u>dithering</u> which was first published in 1976 by Robert W. Floyd and Louis Steinberg. The dithering process begins in the upper left corner of the image. For each pixel, the closest available color in the palette is chosen and the difference between that color and the original color is computed in each RGB channel. Then specific fractions of these differences are dispersed among several adjacent pixels which haven't yet

been visited (below and to the right of the original pixel). Because of the order of processing, the procedure can be done in a single pass over the image.

When you convert an image to Indexed mode, you can choose between two variants of Floyd-Steinberg dithering.

Gamma

Gamma or gamma correction is a non-linear operation which is used to encode and decode luminance or color values in video or still image systems. It is used in many types of imaging systems to straighten out a curved signal-to-light or intensity-to-signal response. For example, the light emitted by a CRT is not linear with regard to its input voltage, and the voltage from an electric camera is not linear with regard to the intensity (power) of the light in the scene. Gamma encoding helps to map the data into a perceptually linear domain, so that the limited signal range (the limited number of bits in each RGB signal) is better optimized perceptually.

Gamma is used as an exponent (power) in the correction equation. Gamma compression (where gamma < 1) is used to encode linear luminance or RGB values into color signals or digital file values, and gamma expansion (where gamma > 1) is the decoding process, and usually occurs where the current-to-voltage function for a CRT is non-linear.

For PC video, images are encoded with a gamma of about 0.45 and decoded with a gamma of 2.2. For Mac systems, images are typically encoded with a gamma of about 0.55 and decoded with a gamma of 1.8. The sRGB color space standard used for most cameras, PCs and printers does not use a simple exponential equation, but has a decoding gamma value near 2.2 over much of its range.

In GIMP, gamma is an option used in the brush tab of the <u>GIMPressionist</u> filter and in the <u>Flame</u> filter. The <u>display</u> <u>filters</u> also include a Gamma filter. Also see the <u>Levels Tool</u>, where you can use the middle slider to change the gamma value.

Gamut

In color reproduction, including computer graphics and photography, the gamut, or color gamut (pronounced / 'gæmət/), is a certain complete subset of colors. The most common usage refers to the subset of colors which can be accurately represented in a given circumstance, such as within a given color space or by a certain output device. Another sense, less frequently used but not less correct, refers to the complete set of colors found within an image at a given time. In this context, digitizing a photograph, converting a digitized image to a different color space, or outputting it to a given medium using a certain output device generally alters its gamut, in the sense that some of the colors in the original are lost in the process. [WKPD-GAMUT]

GIF

GIF™ stands for Graphics Interchange Format. It is a <u>file format</u> with good, lossless compression for images with low <u>color depth</u> (up to 256 different colors per image). Since GIF was developed, a new format called <u>Portable Network Graphics (PNG)</u> has been developed, which is better than GIF in all respects, with the exception of animations and some rarely-used features.

GIF was introduced by CompuServe in 1987. It became popular mostly because of its efficient, LZW compression. The size of the image files required clearly less disk space than other usual graphics formats of the time, such as PCX or MacPaint. Even large images could be transmitted in a reasonable time, even with slow modems. In addition, the open licensing policy of CompuServe made it possible for any programmer to implement the GIF format for his own applications free of charge, as long as the CompuServe copyright notice was attached to them. Colors in GIF are stored in a color table which can hold up to 256 different entries, chosen from 16.7 million different color values. When the image format was introduced, this was not a much of a limitation, since only a few people had hardware which could display more colors than that. For typical drawings, cartoons, black-and-white photographs and similar uses, 256 colors are quite sufficient as a rule, even today. For more complex images, such as color photographs, however, a huge loss of quality is apparent, which is why the format is not considered to be suitable for those purposes.

One color entry in the palette can be defined to be transparent. With transparency, the GIF image can look like it is non-rectangular in shape. However, semi-transparency, as in <u>PNG</u>, is not possible. A pixel can only be either entirely visible or completely transparent.

The first version of GIF was 87a. In 1989, CompuServe published an expanded version, called 89a. Among other things, this made it possible to save several images in one GIF file, which is especially used for simple animation. The version number can be distinguished from the first six bytes of a GIF file. Interpreted as ASCII symbols, they are "GIF87a" or "GIF89a".

GNU

The GNU project was started in 1983 by Richard Stallman with the goal of developing a completely free operating system. It is especially well-known from the GNU General Public License (GPL) and GNU/Linux, a GNU-variant with a Linux kernel.

The name came about from the naming conventions which were in practice at MIT, where Stallman worked at the time. For programs which were similar to other programs, recursive acronyms were chosen as names. Since the new system was to be based on the widespread operating system, Unix, Stallman looked for that kind of name and came up with GNU, which stands for "GNU is not Unix". In order to avoid confusion, the name should be pronounced with the "G", not like "new". There were several reasons for making GNU Unix-compatible. For one thing, Stallman was convinced that most companies would refuse a completely new operating system, if the programs they used wouldn't run on it. In addition, the architecture of Unix made quick, easy and distributed development possible, since Unix consists of many small programs that can be developed independently of each

other, for the most part. Also, many parts of a Unix system were freely available to anyone and could therefore be directly integrated into GNU, for example, the typesetting system, TeX, or the X Window System. The missing parts were newly written from the ground up.

GIMP (GNU Image Manipulation Program) is an official GNU application [WKPD-GNU].

Grayscale

Grayscale is a mode for encoding the colors of an image which contains only black, white and shades of gray. When you create a new image, you can choose to create it in Grayscale mode (which you can colorize later, by changing it to RGB mode). You can also change an existing image to grayscale by using the Grayscale, Desaturate, Decompose, Channel Mixer, although not all formats will accept these changes. Although you can create images in Grayscale mode and convert images to it, it is not a color model, in the true sense of the word. As explained in RGB mode, 24-bit GIMP images can have up to 256 levels of gray. If you change from Grayscale to RGB mode, your image will have an RGB structure with three color channels, but of course, it will still be gray. Grayscale image files (8-bit) are smaller than RGB files.

Guides

Guides are lines you can temporarily display on an image while you are working on it. You can display as many guides as you would like, in either the horizontal or the vertical direction. These lines help you position a selection or a layer on the image. They do not appear when the image is printed.

For more information see Section 1.2, "Guides".

High Dynamic Range

With <u>display-referred</u> data you have roughly two and half stops of head room above middle gray and maybe six and a half usable stops below middle gray, at which point the data is too densely packed into too few tonal steps to accurately display differences between solid black and "just barely gray". So at best you have 9 stops of dynamic range, compared to the 20 or more stops of dynamic range you might find in some (certainly not all!) real world scenes.

The usual solution to the dynamic range limitations of display-referred data is to allow channel values to be however high as is needed to encode the scene data. This means allowing channel values that are above display-referred white.

Several file formats supported by GIMP can be used to import and export high dynamic range images, including floating point tiffs, OpenEXR, and FITS.

When working with high dynamic range data, the <u>channel encoding</u> does need to be linear to avoid gamma artifacts.

Editing high dynamic range data requires that there isn't any clamping code in editing operations and blend modes. At floating point precision:

- Many (but not all) GIMP blend modes are unclamped, including Normal, Addition, Subtract, Multiply, Lighten Only, Darken Only, Difference, and the LCH and Luminance blend modes. Blend modes such as Screen, Soft Light, and Overlay are not unclamped as these operations are designed to work with display-referred data.
- 2. Many (too many to list but certainly not all, as some editing operations are designed to work with displayreferred data) GIMP editing operations also are unclamped, including Levels, Exposure, transforms such as scaling and rotating, and various filter operations such as Gaussian blur.

Portions of the above explanation of "high dynamic range" are slightly modified excerpts from the <u>Models for image editing: Display-referred and scene-referred</u>. These excerpts are quoted by permission and the modified excerpts are licensed as Creative Commons Attribution-ShareAlike 3.0 Unported License.

Histogram

In digital image processing, a histogram is a graph representing the statistical frequency of the gray values or the color values in an image. The histogram of an image tells you about the occurrence of gray values or color values, as well as the contrast range and the brightness of the image. In a color image, you can create one histogram with information about all possible colors, or three histograms for the individual color channels. The latter makes the most sense, since most procedures are based on grayscale images and therefore further processing is immediately possible.

HSV

HSV is a <u>color model</u> which has components for Hue (the color, such as blue or red), Saturation (how strong the color is) and Value (the brightness).

The RGB mode is very well suited to computer screens, but it doesn't let us describe what we see in everyday life; a light green, a pale pink, a dazzling red, etc. The HSV model takes these characteristics into account. HSV and RGB are not completely independent of each other. You can see that with the Color Picker tool; when you change a color in one of the color models, the other one also changes. Brave souls can read *Grokking the GIMP*, which explains their interrelationship.

Brief description of the HSV components:

Hue

This is the color itself, which results from the combination of primary colors. All shades (except for the gray levels) are represented in a *chromatic circle*: yellow, blue, and also purple, orange, etc. The chromatic circle (or "color wheel") values range between 0° and 360°. (The term "color" is often used instead of "Hue". The RGB colors are "primary colors".)

Saturation

This value describes how pale the color is. A completely unsaturated color is a shade of gray. As the saturation increases, the color becomes a pastel shade. A completely saturated color is pure. Saturation values go from 0 to 100, from white to the purest color.

Value

This value describes the luminosity, the luminous intensity. It is the amount of light emitted by a color. You can see a change of luminosity when a colored object is moved from being in the shadow to being in the sun, or when you increase the luminosity of your screen. Values go from 0 to 100. Pixel values in the three channels are also luminosities: "Value" in the HSV color model is the maximum of these elementary values in the RGB space (scaled to 0-100).

HTML notation

A hex triplet is a way of encoding a color for a computer. The "#" symbol indicates that the numbers which follow it are encoded in hexadecimal. Each color is specified in two hexadecimal digits which make up a triplet (three pairs) of hexadecimal values in the form "#rrggbb", where "rr" represents red, "gg" represents green and "bb" represents blue.

Image Hose

An image hose in GIMP is a special type of brush which consists of several images. For example, you could have a brush with footprints, which consists of two images, one for the left footprint and one for the right. While painting with this brush, a left footprint would appear first, then a right footprint, then a left one, etc. This type of brush is very powerful.

An image hose is also sometimes called an "image pipe" or "animated brush". An image hose is indicated in the Brushes dialog by a small red triangle in the lower right corner of the brush's symbol.

For information concerning creating an image hose, please see the <u>Section 5.2, "Creating animated brushes"</u> and Section 5.1, "Adding New Brushes".

Incremental, paint mode

Incremental mode is a paint mode where each brush stroke is drawn directly on the active layer. When it is set, each additional stroke of the brush increases the effect of the brush, up to the maximum opacity for the brush. If incremental mode is not set, brush strokes are drawn on a canvas buffer, which is then combined with the active layer. The maximum effect of a brush is then determined by the opacity, and stroking with the brush repeatedly does not increase the effect beyond this limit.

The two images above were created using a brush with spacing set to 60 percent. The image on the left shows non-incremental painting and the image on the right shows the difference with incremental painting. Incremental mode is a tool option that is shared by several brush tools, except those which have a "rate" control, which automatically implies an incremental effect. You can set it by checking the Incremental checkbox in the tool option dialog for the tool (Paintbrush, Pencil and Eraser).

Indexed Colors

Indexed color mode is a mode for encoding colors in an image where each pixel in the image is assigned an 8-bit color number. The color which corresponds to this number is then put in a table (the palette). Changing a color in the palette changes all the pixels which refer to this palette color. Although you can create images in *Indexed Color* mode and can transform images to it, it is, strictly speaking, not a color model.

See also the Indexed Palette section and the Convert Image to Indexed Colors command.

Interpolation

Interpolation means calculating intermediate values. When you enlarge ("digitally zoom") or otherwise transform (rotate, shear or give perspective to) a digital image, interpolation procedures are used to compute the colors of the pixels in the transformed image. GIMP offers three interpolation methods, which differ in quality and speed. In general, the better the quality, the more time the interpolation takes (see Interpolation methods). GIMP uses interpolation when you Scale an image, Scale a layer, and when you Transform an image.

IPTC

IPTC is an acronym for International Press Telecommunications Council which developed the Information Interchange Model (IIM) for text, image and other media types metadata. Refer to [IPTC].

JPEG

JPEG is a <u>file format</u> which supports compression and works at all color depths. The image compression is adjustable, but beware: Too high a compression could severely reduce image quality, since JPEG compression is lossy.

Use JPEG to create web graphics or if you don't want your image to take up a lot of space. JPEG is a good format for photographs and for computer-generated images (CGI). It is not well suited for:

- digital line drawings (for example, screenshots or vector graphics), in which there are many neighboring pixels with the same color values, few colors and hard edges.
- Black and white images (only black and white, one bit per pixel) or
- half-toned images (newsprint).

Other formats, such as GIF, PNG or JBIG, are far better for these kinds of images.

In general, JPEG transformations are not reversible. Opening and then saving a JPEG file causes a new, lossy compression. Increasing the quality factor later will not bring back the image information which was lost.

L*a*b*

The Lab color space (also called the L*a*b* color space) is a color model developed in the beginning of the 1930s by the Commission Internationale d`Eclairage (CIE). It includes all the colors that the human eye can perceive. That contains the colors of the RGB and the CMYK color spaces, among others. In Lab, a color is indicated by three values: L, a and b. Here, the L stands for the luminance component — corresponding to the gray value — and a and b represent the red-green and blue-yellow parts of the color, respectively.

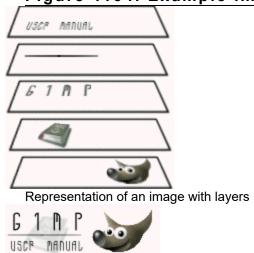
In contrast to RGB or CMYK, Lab is not dependent upon the various input and output devices. For that reason, it is used as an exchange format between devices. Lab is also the internal color model of PostScript Level II.

Layer

You can think of layers as being a stack of slides which are more or less transparent. Each layer represents an aspect of the image and the image is the sum of all of these aspects. The layer at the bottom of the stack is the background layer. The layers above it are the components of the foreground.

You can view and manage the layers of the image through the Layers Dialog.





The final image

Marching Ants

Marching ants is a term which describes the dotted line which surrounds a selection. The line is animated, so it looks as if little ants are running around behind each other.

Masks

A mask is like a veil put over a layer (layer mask) or all the layers of an image (selection mask). You can remove this mask by painting with white color, and you can complete it by painting with black color. When the mask is "applied", non masked pixels will remain visible (the others will be transparent) or will be selected, according to the type of mask.

There are two types of masks:

• Layer Mask: Every layer can have its own mask. The layer mask represents the Alpha channel of the layer and allows you to manage its transparency. By painting on the layer mask, you can make parts of the layer opaque or transparent: painting with black makes the layer transparent, painting with white makes the layer opaque and painting with shades of gray makes the layer semi-transparent. You can use all paint tools to paint on the mask. You can also apply a filter or copy-paste. You can use the Layer mask for transition

effects, volume effects, merging elements from another image, etc. See the <u>Layer Mask</u> section for more details

• Channel Mask, also called Selection Mask: Channel Masks determine the transparency of a selection. By painting on a Channel Mask with white, you remove the mask and increase the selection; with black, you reduce the selection. This procedure lets you create a selection very precisely. You can also save your selections to a Channel Mask with the Save to Channel command. You can retrieve it later by using the "Channel to selection" command from the Channel masks are so important in GIMP that a special type has been implemented: the Quick mask. See the Selection mask section for more details.

Moiré Effect

The moiré effect (pronounce "Moa-ray") is an unintended pattern which appears when a regular pattern of grids or lines interferes with another regular pattern placed over it. This can happen, for example, when you are scanning an image with a periodic structure (such as a checkered shirt or a half-toned image), scanning a digital image, taking a digital photograph of a periodic pattern, or even when silkscreening.

If you discover the problem in time, the best solution is to move the original image a little bit in the scanner or to change the camera angle slightly.

If you cannot re-create the image file, GIMP offers some filters which may help you with the problem. For more information, see the Despeckle and NL Filter (Non-Linear) filters.

Parasite

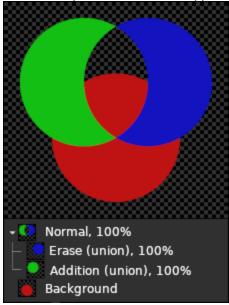
A Parasite is additional data which may be written to an XCF file. A parasite is identified by a name, and can be thought of as an extension to the other information in an XCF file.

Parasites of an image component may be read by GIMP plug-ins. Plug-ins may also define their own parasite names, which are ignored by other plug-ins. Examples of parasites are comments, the save options for the TIFF, JPEG and PNG file formats, the gamma value the image was created with and EXIF data.

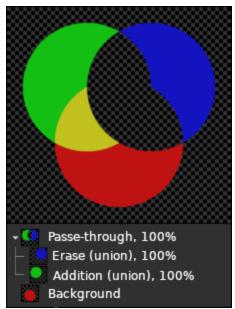
Pass-through

Normally, the layers inside a layer group are isolated from the rest of the image -- the layer group is essentially a separate sub-image, living inside the bigger image; you can merge the group into a single layer, replace the original group with it, and the result would be the same.

In following examples, the names of the relevant layers in the images specify the layer mode, with the composite mode in parentheses where applicable, and the layer's opacity.

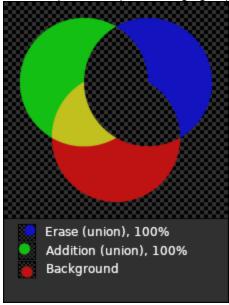


In this example, the group uses Normal mode; note that the green and blue layers don't affect the red layer: the green layer's color isn't added to the red layer's color, and the blue layer only erases the green layer. Layer groups using Pass-through mode are different: the layers inside them "see" the layers below the group, and interact with them according to their layer mode.



In this example, the group uses Pass-through mode. Note that the green layer's color *is* added to the red layer's color, and the blue layer erases both the green and the red layers.

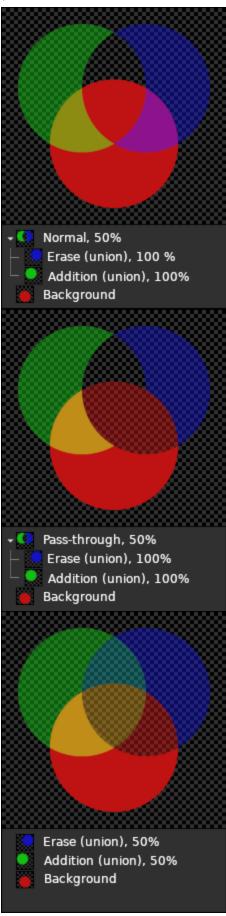
In simple cases, pass-through groups behave as though there is no group involved at all.



The green and blue layers are not inside a group, and the result is the same as in the preceding example. In these cases, the group is primarily an organizational tool: it allows you to group together several layers, achieving some desired effect, and handle them as a unit.

However, in general, pass-through groups are not equivalent to having no group at all. For example, when the group's opacity is less than 100%, pass-through groups still behave as a single unit, applying the opacity to the group as a whole (like a normal group would) rather than to the individual layers, while still letting the group layers interact with the background layers.

Figure 1135. Three images



Compare these three images, which demonstrate the same compositions as above, with the group (or the individual layers, in the last example) having an opacity of 50%. When using pass-through groups to group together several layers achieving a collective effect, the group's opacity essentially lets you control the "strength" of the effect, which can't be achieved using either normal groups, or individual layers.

Path

A Path is a contour composed of straight lines, curves, or both. In GIMP, it is used to form the boundary of a selection, or to be *stroked* to create visible marks on an image. Unless a path is stroked, it is not visible when the image is printed and it is not saved when the image is written to a file (unless you use XCF format). See the <u>Paths Concepts</u> and <u>Using Paths</u> sections for basic information on paths, and the <u>Path Tool</u> section for information on how to create and edit paths. You can manage the paths in your image with the <u>Paths Dialog</u>.

PDB

All of the functions which GIMP and its plug-ins make available are registered in the Procedure Database (PDB). Developers can look up useful programming information about these functions in the PDB by using the <u>Procedure Browser</u>.

PDF

PDF (Portable Document Format) is a <u>file format</u> which was developed by Adobe to address some of the deficiencies of PostScript. Most importantly, PDF files tend to be much smaller than equivalent PostScript files. As with PostScript, GIMP's support of the PDF format is through the free Ghostscript libraries.

Pixel

A pixel is a single dot, or "picture element", of an image. A rectangular image may be composed of thousands of pixels, each representing the color of the image at a given location. The value of a pixel typically consists of several Channels, such as the Red, Green and Blue components of its color, and sometimes its Alpha (transparency).

Plug-in

Plug-ins are external programs that run under the control of the main GIMP application and provide specific functions on-demand. See Section 1, "Plug-Ins" for further information.

PNG

PNG is the acronym of "Portable Network Graphic" (pronounce "ping". This recent format offers many advantages and a few drawbacks: it is not lossy and gives files more heavy than the JPEG format, but it is perfect for saving your images because you can save them several times without losing data each time (it is used for this Help). It supports True Colors (several millions of colors), indexed images (256 colors like GIF), and 256 transparency levels (while GIF supports only two levels).

PostScript

Created by Adobe, PostScript is a page description language mainly used by printers and other output devices. It's also an excellent way to distribute documents. GIMP does not support PostScript directly: it depends on a powerful free software program called Ghostscript.

The great power of PostScript is its ability to represent vector graphics—lines, curves, text, paths, etc.—in a resolution-independent way. PostScript is not very efficient, though, when it comes to representing pixel-based raster graphics. For this reason, PostScript is not a good format to use for saving images that are later going to be edited using GIMP or another graphics program.

PSD

PSD is Adobe Photoshop's native <u>file format</u>, and it is therefore comparable to <u>XCF</u> in complexity. GIMP's ability to handle PSD files is sophisticated but not perfect: some features of PSD files are not loaded or may look slightly different. Although there is an online specification, it does not cover all details, which makes it difficult to support all features of PSD files.

Quantization

Quantization is the process of reducing the color of a pixel into one of a number of fixed values by matching the color to the nearest color in the colormap. Actual pixel values may have far more precision than the discrete levels which can be displayed by a digital display. If the display range is too small, then abrupt changes in colors (false contours, or banding) may appear where the color intensity changes from one level to another. This is especially noticeable in Indexed images, which have 256 or fewer discrete colors.

One way to reduce quantization effects is to use <u>Dithering</u>. The operations in GIMP which perform dithering are the <u>Gradient tool</u> (if you have enabled the dithering option) and the <u>Convert to Indexed</u> command. However, they only work on RGB images and not on Indexed images.

Rendering Intent

Rendering intents are ways of dealing with colors that are out-of-<u>Gamut</u> colors present in the source space that the destination space is incapable of producing. There are four rendering intents defined by the ICC:

Perceptual

This rendering intent is typically used for photographic content. It scales one gamut to fit into the other while maintaining the relative position of colors.

Relative colorimetric

This rendering intent is typically used for spot colors. Colors that are not out of gamut are left unchanged. Colors outside the gamut are converted to colors with the same lightness, but different saturation, at the edge of the gamut.

Saturation

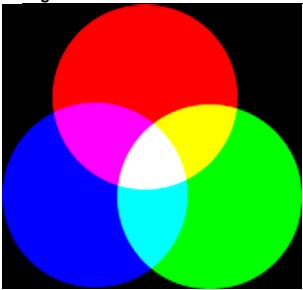
This method is typically used for business graphics. The relative saturation of colors is mostly maintained, but lightning is usually changed.

Absolute colorimetric

This rendering intent is most often used in proofing. It preserves the native device white point of the source image.

RGB





RGB is a color model which has components for Red, Green and Blue. These colors are emitted by screen elements and not reflected as they are with paint. The resulting color is a combination of the three primary RGB colors, with different degrees of lightness. If you look closely at your television screen, whose pitch is less than that of a computer screen, you can see the red, green and blue elements lit with different intensities. The RGB color model is *additive*.

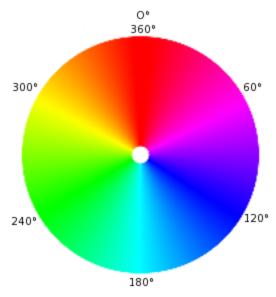
GIMP uses eight bits per channel for each primary color. That means there are 256 intensities (Values) available, resulting in 256×256×256 = 16,777,216 colors.

It is not obvious why a given combination of primary colors produces a particular color. Why, for instance, does 229R+205G+229B give a shade of pink? This depends upon the human eye and brain. There is no color in nature, only a continuous spectrum of wavelengths of light. There are three kinds of cones in the retina. The same wavelength of light acting upon the three types of cones stimulates each of them differently, and the mind has learned, after several million years of evolution, how to recognize a color from these differences. It is easy to see that no light (0R+0G+0B) produces complete darkness, black, and that full light

(255R+255G+255B) produces white. Equal intensity on all color channels produces a level of gray. That is why there can only be 256 gray levels in GIMP.

Mixing two *Primary colors* in RGB mode gives a *Secondary color*, that is, a color in the CMY model. Thus combining Red and Green gives Yellow, Green and Blue give Cyan, Blue and Red give Magenta. Don't confuse secondary colors with *Complementary colors* which are directly opposite a primary color in the chromatic circle:

Figure 1137. Colorcircle



Mixing a primary color with its complementary color gives gray (a neutral color).

It is important to know what happens when you are dealing with colors in GIMP. The most important rule to remember is that decreasing the intensity of a primary color results in increasing the intensity of the complementary color (and vice versa). This is because when you decrease the value of a channel, for instance Green, you automatically increase the relative importance of the other two, here Red and Blue. The combination of these two channels gives the secondary color, Magenta, which is the complementary color of Green.

The Color Picker tool lets you find out the RGB values of a pixel and the hextriplet for the color.

Sample Merged

Sample Merged is an option you can set when you use the <u>Bucket Fill</u> tool, the <u>Color Picker</u> tool and various selection tools. It is useful when you are working on an image with several layers and the active layer is either semi-transparent or has a <u>Layer Mode</u> which is not set to Normal. When you check the Sample Merged option, the color which is used for the operation is the composite color of all the visible layers. When the Sample Merged option is not checked, the color used is the color of the active layer itself.

See also the Clone Tool for using Sample Merged in non-destructive image editing.

Saturation

This term refers to color purity. Imagine you add pigment to white paint. Saturation varies from 0 (white, fully toned down, fully diluted) to 100 (pure color).

Scene-referred

When speaking of images captured by a camera, scene-referred means that the intensities in the image RGB channels are proportional to the intensities in the scene that was photographed.

"Scene-referred" is not the same as <u>high dynamic range</u>, as the camera might have been aimed at a low dynamic range scene such as a foggy early morning view. However, adding a light source to the captured frame (eg the moon breaking through the clouds or a street lamp) will turn even a foggy morning into a high dynamic range scene.

As lightwaves do combine linearly, by definition a scene-referred image (whether real or imaginary) must be encoded linearly to preserve the scene-referred nature of the data.

Supersampling

Supersampling is a more sophisticated antialiasing technique, that is, a method of reducing jagged and stair-stepped edges along a slanted or curved line. Samples are taken at several locations *within* each pixel, not just at the center, and an average color is calculated. This is done by rendering the image at a much higher resolution than the one being displayed and then shrinking it to the desired size, using the extra pixels for calculation. The result is a smoother transition from one line of pixels to another along the edges of objects.

The quality of the result depends on the number of samples. Supersampling is often performed at a range of 2× to 16× the original size. It greatly increases the amount of time needed to draw the image and also the amount of space needed to store the image in memory.

One way to reduce the space and time requirement is to use Adaptive Supersampling. This method takes advantage of the fact that very few pixels are actually on an object boundary, so only those pixels need to be supersampled. At first, only a few samples are taken within a pixel. If the colors are very similar to each other, only those samples are used to calculate the final color. If not, more samples are used. This means that the higher number of samples is calculated only where necessary, which improves performance.

SVG

SVG stands for Scalable Vector Graphics. It is a format for two-dimensional vector graphics, both static and animated. You can export GIMP paths to SVG and you can import SVG documents into GIMP from a vector graphic software. See [WKPD-SVG] for more details.

TGA

TGA (TARGA Image File) is a <u>file format</u> which supports 8, 16, 24 or 32 bits per pixel and optional RLE compression. It was originally developed by the Truevision company. "TGA" stands for Truevision Graphics Adapter and "TARGA" stands for Truevision Advanced Raster Graphics Adapter.

TIFF

TIFF (Tagged Image File Format) is a <u>file format</u> which was developed primarily for scanned raster graphics for color separation. Six different encoding routines are supported, each with one of three different image modes: black and white, grayscale and color. Uncompressed TIFF images may be 1, 4, 8 or 24 bits per pixel. TIFF images compressed using the LZW algorithm may be 6, 8 or 24 bits per pixel. Besides PostScript format, TIFF is one of the most important formats for preliminary stages of printing. It is a high quality file format, which is perfect for images you want to import to other programs like FrameMaker or CorelDRAW.

Tile

A Tile is a part of an image which GIMP currently has open. In order to avoid having to store an entire image in memory at the same time, GIMP divides it into smaller pieces. A tile is usually a square of 64×64 pixels, although tiles at the edges of an image may be smaller than that.

At any time, a tile may be in main memory, in the tile cache in RAM, or on disk. Tiles which are currently being worked on are in main memory. Tiles which have been used recently are in RAM. When the tile cache in RAM is full, tiles which have been used least recently are written to disk. GIMP can retrieve the tiles from RAM or disk when they are needed.

Do not confuse these tiles with those in the Tile Filter

URI

A Uniform Resource Identifier (URI) is a string of characters that serves to identify an abstract or a physical resource. URIs are used for the identification of resources in the Internet (such as web pages, miscellaneous files, calling up web services, and for receivers of e-mail) and they are especially used in the Worldwide Web.

URL

URLs (Uniform Resource Locators) are one type of Uniform Resource Identifiers (URIs). URLs identify a resource by its primary access mechanism (commonly http or ftp) and the location of the resource in the computer network. The name of the URI scheme is therefore generally derived from the network protocol used for it. Examples of network protocols are http, ftp and mailto.

Since URLs are the first and most common kinds of URIs, the terms are often used synonymously.

Value

This term often refers to the light intensity, the luminosity of a color. It varies from 0 (black) to 100 (full light).

XCF

XCF is a <u>file format</u> which is special because it is GIMP's native file format: that is, it was designed specifically to store all of the data that goes to make up a GIMP image. Because of this, XCF files may be quite complicated, and there are few programs other than GIMP that can read them.

When an image is stored as an XCF file, the file encodes nearly everything there is to know about the image: the pixel data for each of the layers, the current selection, additional channels if there are any, paths if there are any, and guides. The most important thing that is *not* saved in an XCF file is the undo history.

The pixel data in an XCF file is represented in a lossless compressed form: the image byte blocks are compressed using the lossless RLE algorithm. This means that no matter how many times you load and save an image using this format, not a single pixel or other image data is lost or modified because of this format. XCF files can become very large, however GIMP allows you to compress the files themselves, using either the gzip or bzip2 compression methods, both of which are fast, efficient, and freely available. Compressing an XCF file will often shrink it by a factor of 10 or more.

The GIMP developers have made a great effort to keep the XCF file format compatible across versions. If you create a file using GIMP 3.0, it ought to be possible to open the file in GIMP 2.10. However, some of the information in the file may not be usable.

Documentation about XCF format can be found at https://developer.gimp.org/core/standards/xcf/.

XDG

<u>Freedesktop.org</u> (also called XDG) is a project to work on interoperability among desktop environments on Linux and Unix-like operating systems.

Such operating systems usually include software which implements XDG specifications to allow an application to open other applications, such as a web browser, an email client, or software to take screenshots.

XMP

XMP is an acronym for Extensible Metadata Platform. It is a metadata format based on XML used in PDF and photographs. Report to [XMP] for detailed explanations.

YCbCr

YCbCr is a <u>color model</u> which was developed for the PAL television standard as a simple modification to the YUV color model. In the meantime, it has become the CCIR-601 standard for image and video recording. For example, it is used for JPEG pictures and MPEG videos, and therefore also on DVDs, video CDs and for most other widespread digital video standards. Note that a color model is still not a color space, since it doesn't determine which colors are actually meant by "red", "green" and "blue". For a color space, there must still be a reference to a specific absolute color value.

There are color models which do not express a color by the additive basic colors, red, green and blue (RGB), but by other properties, for example, the brightness-color model. Here, the criteria are the basic brightness of the colors (from black, through gray, to white), the colors with the largest portion (red, orange, yellow, green, blue, violet, or other pure colors that lie between them) and the saturation of the colors ("gaudy" to pale). This color model is based on the ability of the eye to recognize small differences in luminosity better than small color differences, and to recognize those better than small differences in saturation. That makes gray text written on a black background easy to read, but blue text on a red background very hard to read, even with the same basic brightness. Such color models are called brightness-color models.

The YCbCr model is a slight adaptation of such a brightness-color model. An RGB color value is divided into a basic brightness, Y, and two components, Cb and Cr, where Cb is a measurement of the deviation from gray in the blue direction, or if it is less than 0.5, in the direction of yellow. Cr is the corresponding measurement for the difference in the direction of red or turquoise. This representation uses the peculiarity of the eye of being especially sensitive to green light. That is why most of the information about the proportion of green is in the basic brightness, Y, and only the deviations for the red and blue portions need to be represented. The Y values have twice the resolution of the other two values, Cb and Cr, in most practical applications, such as on DVDs.

YUV

YUV is a color model which uses two components to represent the color information, luma (the strength of the light per area) and the chrominance, or proportion of color (chroma), where the chrominance again consists of two components. The development of the YUV color model also goes back to the development of color television (PAL), where ways were sought for transmitting the color information along with the black-and-white signal, in order to achieve backwards compatibility with old black and white televisions without having to increase the available transmission bandwidth. From the YUV color model of the analog television techniques, the YCrCb color model was developed, which is used for most kinds of digital image and video compression. Erroneously, the YUV color model is also often spoken about in those fields, although the YCbCr model is actually used. This often causes confusion. For the calculation of the luma signals, the underlying RGB data is first adjusted with the gamma value of the output device, and an R'G'B' signal is obtained. The three individual components are added together with different weights, to form the brightness information, which also functions as the VBS signal (Video Baseband Signal, the black-and-white signal) for the old black and white televisions.

Y=R+G+B

The exact calculation is more complicated, however, since some aspects of the color perception of the human eye have to be taken into account. For example, green is perceived to be lighter than red, and this is perceived to be lighter than blue. Furthermore, in some systems gamma correction of the basic color is first performed. The chrominance signals, and the color difference signals also, contain the color information. They are formed by the difference of blue minus luma or red minus luma.

U=B-Y

V=R-Y

From the three generated components, Y, U and V, the individual color proportions of the basic color can be calculated again later:

Y + U = Y + (B - Y) = Y - Y + B = B Y + V = Y + (R - Y) = Y - Y + R = R

Y - B - R = (R + G + B) - B - R = G

Furthermore, because of the structure of the retina of the human eye, it turns out that the brightness information is perceived at a higher resolution than the color, so that many formats based on the YUV color model compress the chrominance to save bandwidth during transmission.



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Zoom tool

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3/29/25, 9:55 PM Bibliography

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[AdvanceMAME] AdvanceMAME project. https://www.advancemame.it/ .

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Glossary



<u>Appendix A. Reporting Bugs and Requesting Enhancements</u>

Appendix A. Reporting Bugs and Requesting Enhancements





Appendix A. Reporting Bugs and Requesting Enhancements

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- 1. Making sure it's a Bug
- 2. Reporting the Bug

Sad to say, no version of GIMP has yet been absolutely perfect. Even sadder, it is likely that no version ever will be. In spite of all efforts to make everything work, a program as complicated as GIMP is bound to screw things up occasionally, or even crash.

But the fact that bugs are unavoidable does not mean that they should be passively accepted. If you find a bug in GIMP, the developers would like to know about it so they can at least try to fix it.

Suppose, then, that you have found a bug, or at least think you have: you try to do something, and the results are not what you expect. What should you do? How should you report it?



Tip

The procedure for making an *enhancement request*—that is, for asking the developers to add a missing feature—is the same as the procedure for reporting a bug.

In common with many other free software projects, GIMP uses a bug-reporting mechanism called *GitLab*. This is a very powerful web-based system, capable of managing thousands of bug reports without losing track. In fact, GIMP shares its GitLab database with the entire Gnome project.

1. Making sure it's a Bug

The first thing you should do, before reporting a bug, is to make an effort to verify that what you are seeing really *is* a bug. It is hard to give a method for doing this that applies to all situations, but reading the documentation will often be useful, and discussing the question on IRC or on Discourse may also be quite helpful. If you are seeing a *crash*, as opposed to mere misbehavior, the odds that it is a true bug are pretty high: well written software programs are not designed to crash under *any* circumstances. In any case, if you have made a conscious effort to decide whether it is really a bug, and at the end still aren't sure, then please go ahead and report it: the worst that can happen is that you will waste a bit of time for the development team.



Note

Actually there are a few things that are known to cause GIMP to crash but have turned out to be too inconvenient to be worth fixing. One of them is asking GIMP to do something that requires vast amounts of memory, such as creating an image one million pixels on a side.

You should also make sure that you are using an up-to-date version of GIMP: reporting bugs that have already been fixed is just a waste of everybody's time. (GIMP 1 is no longer maintained, so if you use it and find bugs, either upgrade to GIMP 2 or live with them.) Particularly if you are using the development version of GIMP, make sure that you can see the bug in the latest release before filing a report.

If after due consideration you still think you have a legitimate bug report or enhancement request, the next step is to go to GIMP's list of issues (https://gitlab.gnome.org/GNOME/gimp/issues/), and try to see whether somebody else has already reported the same thing.

Find a Specific Bug

Enter some (space separated) search terms, e.g.

filter crash

in the "Search or filter results..." text box and press Enter. By default you only see open reports; you can change this by clicking "All" above the search field.

The result is either a list of bug reports – hopefully not too long – or a message saying "Sorry, your filter produced no results". If you don't find a related bug report by doing this, it may be worth trying another search with different terms. If in spite of your best efforts, you file a bug report and it ends up being closed as a duplicate, don't be too upset: it has happened repeatedly to the author of this documentation.





Bibliography



2. Reporting the Bug

2. Reporting the Bug



Appendix A. Reporting Bugs and Requesting Enhancements



2. Reporting the Bug

Okay, so you have done everything you could to make sure, and you still think it's probably a bug. You should then go ahead and file a bug report on the GitLab page.



Note

The first time you file a bug report, you will be asked to create a GitLab account. The process is easy and painless, and you probably won't even get any spam as a result.

1. File a New Issue

Go to https://gitlab.gnome.org/GNOME/gimp/issues, and select New issue.

If you are not logged in, you are automatically redirected to the login page. After entering your user name (login) and password, you get back to the "New Issue" page.

2. Fill out the Template

Select Choose a template and choose whether you plan to report a bug or to request a feature. Note that most of the information you enter can be changed later by the developers if you get it wrong, so try to get it right but don't be obsessive about it.

Title

Give a one-sentence summary that is descriptive enough so that somebody searching for similar bugs would find your bug report on the basis of the words this summary contains.

Description

Describe the problem. Be as specific as you can, try to provide all the information requested from you, and include all information that you think might possibly be relevant. The classic totally useless bug report is, "GIMP crashes. This program sucks". There is no hope that the developers can solve a problem if they can't tell what it is.

Sometimes it is very helpful to augment a bug report with a screenshot or some other type of data. If you need to do this, click on the button Attach a file, and follow the directions. But please don't do this unless you think the attachment is really going to be useful—and if you need to attach a screenshot, don't make it any larger than necessary. Bug reports are likely to remain on the system for years, so there is no sense in wasting memory.

When you have filled out all of these things, press the Submit issue button and your bug report will be submitted. It will be assigned a number, which you may want to make note of; you will, however, be emailed any time somebody makes a comment on your bug report or otherwise alters it, so you will receive reminders in any case. You can see the current state of your bug report at any time by going to https://gitlab.gnome.org/GNOME/gimp/issues/.







<u>Appendix A. Reporting Bugs and Requesting</u> Enhancements

Report a bug in GIMP Report a documentation error

Appendix B. How to Contribute

Appendix B. How to Contribute





Appendix B. How to Contribute

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4. Working under Windows

Welcome to the GIMP-Help team!

This tutorial is intended for writing documentation. If you want to *translate* the documentation or the user interface, please go to "https://l10n.gnome.org/teams/xx" where "xx" is your language code: ISO 639-1 language codes can be found at https://www.loc.gov/standards/iso639-2/php/code_list.php.

1. Prerequisites

1.1. Join Discourse

You can join <u>Gnome's Discourse server</u> and subscribe to the <u>gimp</u> and <u>documentation</u> tags. Please, feel free to ask questions. If you do, remember to set the relevant tags, or we may not see the message.

1.2. Create a Local Working Copy of Code

The GIMP help Manual is lodged in a central repository at https://gitlab.gnome.org/GNOME/gimp-help. Creating a local copy of this repository to work on makes sure that everyone can work on his own without fuzzing around into works of other contributors.

As a newbie, you will access the git repository anonymously (without an account). Open a terminal and type: git clone https://gitlab.gnome.org/GNOME/gimp-help.git .

If you have a GNOME account, the command is: git clone git@gitlab.gnome.org:GNOME/gimp-help.git.

This will create a "gimp-help" folder in your current directory. Be patient! That's a big download: about 700 MB.

1.3. Installing your sandbox

After downloading your local copy, run: *cd gimp-help* then ./autogen.sh --without-gimp ALL_LINGUAS="en xx". When running ./autogen.sh, you can notice some not found packages, for example "checking for dblatex... no". Most of them are related to PDF files and you have to install them before running ./autogen.sh again if you want to create PDF files.

1.4. The gimp-help folder

The GIMP User Manual is maintained in the xml files of the "src" folder. You will use these xml files to work on.



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2. Workflow



Appendix B. How to Contribute



2. Workflow

2.1. Writing

The language is English (USA).

To edit XML files, use your preferred text editor (this guide's author prefers the free editor Kate). You must set the editor for:

- English-US language.
- Indent with 2 spaces (the **Tab** key must move pointer by two spaces).
- Replace tabs with spaces (for compatibility with all text editors and web browsers).
- 80 characters per line.
- Automatic spell checking with English (USA) for default language.

Source files are written in the XML language according to the DocBook DTD. DocBook specifications can be found at https://tdg.docbook.org/tdg/4.5/docbook.html.

Don't be afraid. We don't use all these items and you will learn XML progressively reading existing XML files. For new files, please use the templates you can find in the gimp-help/docs/templates folder.



Note

If you write a new file, you must add it in the src/gimp.xml file, or in the XML file that calls it (for example, the src/menus/edit.xml file calls undo.xml, redo.xml, fade.xml, and so on).







Appendix B. How to Contribute



2.2. Validating

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2.2. Validating



2. Workflow



2.2. Validating

When you have finished writing, you should validate your work:

- For a single file, you can use the following command line: **xmllint --noout --nonet --valid your-file.xml**. This command displays nothing if your file is OK. When an error is found it will show a message indicating the kind of error and where in your file it was encountered.
 - This command can be used for quickly checking an xml file. It can miss or may not find some errors. In case of external references to other files it also may show incorrect error messages, because this command only checks a single file.
 - (The Kate editor has an option (a plug-in) to validate the active xml file.)
- When you want to check multiple files or the whole gimp-help repository you should run **make validate-en**. You should get a "No error" message.
 - If not, a list of validity errors is displayed with line numbers referring to the en.xml log file that you can find in the /log folder.
 - Open this en.xml file in a text editor, use the "jump to line" command of your editor (the Kate editor command is **Ctrl** + **G**), and enter the line number to jump to the concerned line in the en.xml file. There, you will find the error.

If you have worked on several XML files, look above in the en.xml file to find (in the "xml:base" field of the "id" tag), in which xml file the error is.

Fix the error. Don't forget to save the file and run make validate-en again.



Note

A common mistake is editing the en.xml log file instead of the XML file.



2. Workflow





Report a bug in GIMP Report a documentation error

2.3. Images

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2.3. Images



2. Workflow



2.3. Images

You also have to manage screenshots. Here are some hints for making good screenshots:

- reduce screenshot area as much as possible cropping the window manager borders and disabling the help button (you can do it in the preference dialog),
- set the image mode to indexed 255 colors Image → Mode → Indexed
 This is not necessary for icons and if your image has only few colors. In these cases, indexed images are bigger than non-indexed.
- set print resolution to 144 ppi (not for small images like icons). You can do this easily with GIMP from Image → Print Size...
- Export images in the PNG format.

Don't include English text in images. Translators can't translate it and many users don't like that. Use XML captions instead, or provide a .xcf file in the Docs → xcf images folder, indicating it by a comment in the XML file: <!--TO TRANSLATORS: Corresponding .xcf file is in https://gitlab.gnome.org/GNOME/gimp-help/tree/master/docs/xcf%20images -->

Icons for GIMP are in /usr/share/gimp/3.0/icons/. GTK icons are in /usr/share/icons/.

To include an icon in the text: <guiicon> <inlinemediaobject> <imageobject> <imagedata fileref="path-to-icon"/> </imageobject> </inlinemediaobject> </guiicon>

Three commands to manage your images:

- make check-image-resolutions-en: gives the references of images whose resolution is not 144 ppi.
- make check-images-en: give references of missing or orphaned images.
- mogrify units PixelsPerTrack -density 144x144 *.png to set the print resolution of all PNG images.







2.2. Validating



2.4. Create HTML Files

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2.4. Create HTML Files



2. Workflow



2.4. Create HTML Files

Once XML files have been validated, run **make html-en**. Creating HTML files is important to have an idea about what users will see. You will probably notice some improvements to be made on your XML file.

You can make an HTML draft (when the folder xml/en has been created during validation) for a single source xml file, by running, for instance, the command **make preview-xml/en/path-to-file.xml**. This creates draft.html file in the html folder.

You can also use YELP and run yelp file:///your-file.xml.







2.3. Images



2.5. Sending your files

2.5. Sending your files



2. Workflow



2.5. Sending your files

When your files are ready:

You don't have a GNOME account

if you don't have a GNOME account, you must find a correspondent who accepts to "push" files for you; that will not be difficult if you send a message to the list. Either you send your xml files and the attached images in a compressed file, (in a tree reproducing that of the src and images folders if you send several files to make your correspondent's task easier), or you send a "patch" that you have to create.

Before creating a patch, you have to get all your xml files and images in the index. Being in the gimp-help folder, do git status. If you have files in the Untracked files section, run git add -A.

Then run **git diff --full-index --binary origin > name-of-the-patch** to create the patch.

You have a GNOME account

All being well, you know how to manage Git. There are many tutorials for that on the Web.

A common workflow is:

- make validate-en
- git status
- git stash
- git pull
- git status
- git stash apply
- Fix any conflicts
- git add -A
- git status
- git commit -m "a message"
- git push











3. Annexes

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3. Annexes



Appendix B. How to Contribute



3. Annexes

XML notes

ID's

ID's, which identify commands and are used when pressing the F1 key in the GIMP interface, are in https://git.gnome.org/browse/gimp/tree/app/widgets/gimphelp-ids.h

XML Tags Examples

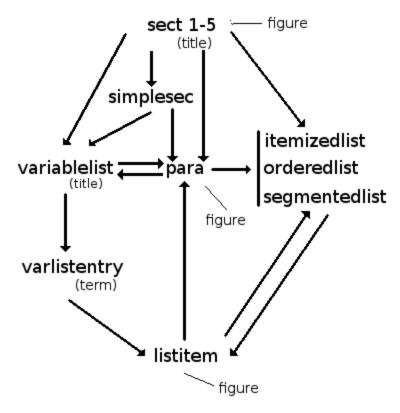
procedure: in using/web.xml.
table: in toolbox/tools-painting.xml.

programlisting: in using/script-fu-tutorial.xml.

segmentedlist: in dialogs/path-dialog.xml for a n columns list.

Parents and Children

Here is a diagram I often use.











4. Working under Windows

4. Working under Windows



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4. Working under Windows

The documentation here was outdated. For now, please refer to our README for the gimp-help repository.







3. Annexes



<u>Appendix C. Tone</u> Mapping and Shadow Recovery Using GIMP's Colors → Exposure...

Appendix C. Tone Mapping and Shadow Recovery Using GIMP's Colors → Exposure...





Appendix C. Tone Mapping and Shadow Recovery Using GIMP's Colors \rightarrow Exposure...

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- 1. High bit depth GIMP's floating point Exposure operation: much better than Curves for lightening the shadows and midtones of an image without blowing the highlights
- 2. A step-by-step example showing how to recover shadow information using high bit depth GIMP's floating point Colors → Exposure... operation
- 3. Use Notes
- 4. Conclusion

This tutorial comes from www.gimp.org/tutorials and was created by Elle Stone. It is presented here for translations. A very common editing problem is how to lighten the shadows and midtones of an image while retaining highlight details, a task sometimes referred to as "shadow recovery" and more generally speaking as "tone mapping". This step-by-step tutorial shows you how to use high bit depth GIMP's floating point Exposure operation to add one or more stops of positive exposure compensation to an image's shadows and midtones while retaining highlight details.

1. High bit depth GIMP's floating point Exposure operation: much better than Curves for lightening the shadows and midtones of an image without blowing the highlights

A very common editing problem is how to lighten the shadows and midtones of an image without blowing out the highlights, which problem is very often encountered when dealing with photographs of scenes lit by direct sunlight. Precanned algorithms for accomplishing this task are often referred to as "shadow recovery" algorithms. But really these algorithms are special-purpose tone-mapping algorithms, which sometimes work pretty well, and sometimes not so well, depending on the algorithm, the image, and your artistic intentions for the image.

This step-by-step tutorial shows you how to use GIMP's unbounded floating point Exposure operation to recover shadow information—that is, add one or more stops of positive exposure compensation to an image's shadows and midtones—without blowing out or unduly compressing the image highlights. The procedure is completely "hand-tunable" using masks and layers, and is as close as you can get to non-destructive image editing using high bit depth GIMP.

Figure 1: power lines at noon

Before and after tone mapping (aka "shadow recovery") using high bit depth GIMP's floating point Exposure operation.



Scene-referred interpolated raw file.



After tone mapping/shadow recovery using GIMP unbounded Levels.

High bit depth GIMP is my primary image editor, and I've used the procedure described below for the last couple of years as my "go to" way to modify image tonality. The same general procedure can be used to darken as well as lighten portions of an image, again controlling the effect using a layer mask. This isn't exactly nondestructive editing because at some point you need to make a "New from Visible" layer. But unlike using Curves, using high bit depth GIMP's floating point Exposure operation doesn't clip RGB channel values and allows you to fine-tune the results by modifying and re-modifying the layer mask until you are completely happy with the resulting tonality.



4. Working under Windows



2. A step-by-step example showing how to recover shadow information using high bit depth GIMP's floating point Colors → Exposure... operation

2. A step-by-step example showing how to recover shadow information using high bit depth GIMP's floating point Colors → Exposure... operation



Appendix C. Tone Mapping and Shadow Recovery Using GIMP's Colors \rightarrow Exposure...



2. A step-by-step example showing how to recover shadow information using high bit depth GIMP's floating point Colors \rightarrow Exposure... operation

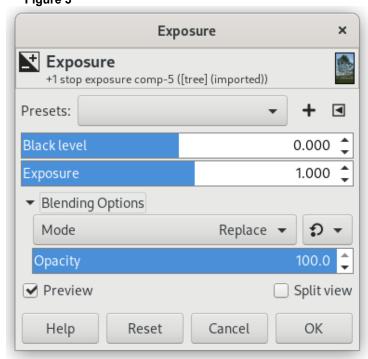


Using high bit depth GIMP's Exposure operation to lighten the ground by one stop without blowing out portions of the sky.

- Left: The original image, an interpolated camera raw file that was deliberately underexposed in camera to avoid blowing out the sky. It might not appear to be the case, but this image is already very close to having out of gamut RGB channel values in the sky, and a simple Auto Stretch Contrast won't lighten the image at all.
- Right: The same image after using high bit depth GIMP's Exposure operation at 32-bit floating point linear precision to add one stop of positive exposure compensation. An inverse grayscale mask was used to keep the highlights from blowing out.

This step-by-step example provides a sample image and is broken down into five steps, starting with downloading the image. Steps 3, 4, and 5 describe the actual procedure.

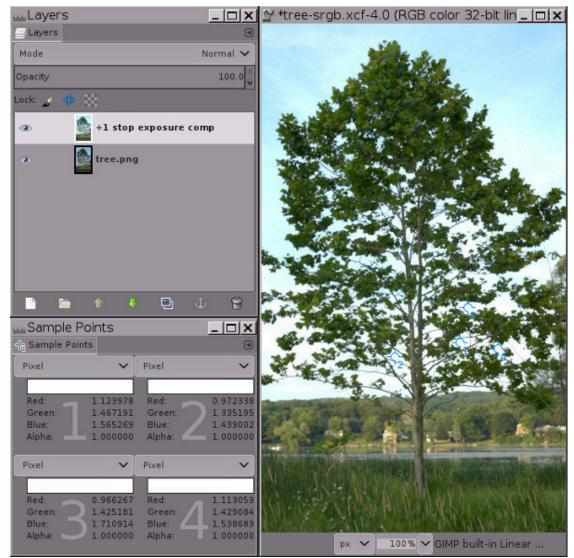
- 3/29/25, 9:58 PM 2. A step-by-step example showing how to recover shadow information using high bit depth GIMP's floating point Colors → Exposu...
 - 1. Download tree.png, which is a 16-bit integer sRGB image. High bit depth GIMP really is an "sRGB only" image editor, so it's best if you don't even try to edit in other RGB working spaces.
 - 2. Open tree.png with GIMP and assign the GIMP built-in sRGB profile (the image colors won't change a bit). Then convert the image to 32-bit floating point linear precision: Select Image \rightarrow Encoding \rightarrow 32 bit floating point, and in the Encoding Conversion dialog, select Linear light (this ensures that the Normal blend mode produces radiometrically correct results).
 - 3. Make a copy of the "tree.png" layer via Layer → New Layer... or Layer → New from Visible, and label it "+1 stop exposure comp". Then use Colors → Exposure... to add one stop of positive exposure compensation. Figure 3 below shows the proper settings for the Exposure operation dialog, and Figure 4 shows the result: Figure 3



Using the Exposure operation to add one stop of positive exposure compensation.

When using the Exposure operation to add one stop of positive exposure compensation, make sure the image really is at floating point precision, because integer precision will clip the highlights.

Figure 4



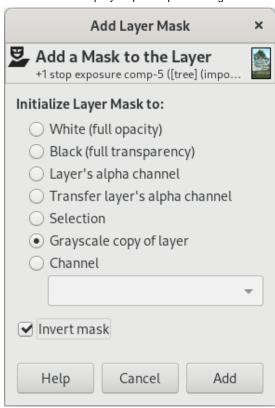
At floating point precision, GIMP's Exposure operation is unbounded. This means you can use the Exposure operation to add positive exposure compensation without blowing out the highlights.

Notice the RGB channel values for the four sample points: the channel information that would have been clipped using integer precision is encoded using channel values that are greater than 1.0 floating point.

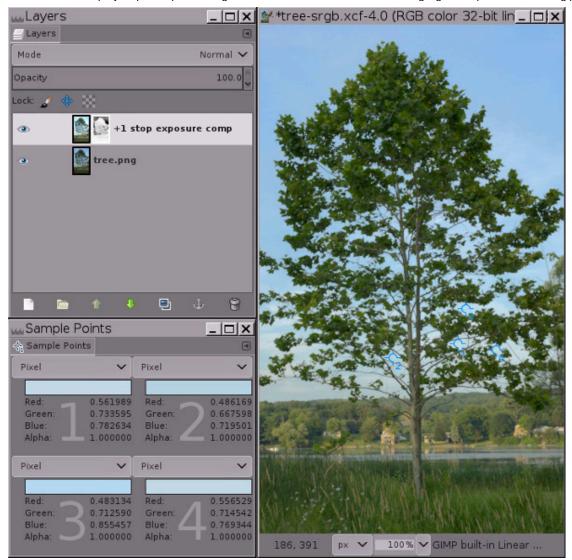
The image in Figure 4 clearly has "blown" highlights in the sky. But the highlights aren't really blown (that is, clipped to 1.0 in one or more channels). Instead the highlight information is still there, but the RGB channel values fall outside the RGB <u>display channel value</u> range of 0.0f to 1.0f. The sample points dialog in Figure 4 above shows four sample points that have RGB channel values that are greater than 1.0. As shown in Figure 5 below, adding a mask allows you to recover these highlights by bringing them back down into the display range.

If you had used integer precision instead of floating point, the highlights really would be blown: The sample points would have a maximum channel values of 255, 65535 or 4294967295, depending on the bit depth. And masking would only "recover" a solid expanse of gray, completely lacking any details (try for yourself and see what happens).

4. Add an inverse gravscale laver mask: Right-click on the laver and select Laver → Mask → Add Laver Masks..., and when the Add Layer Mask dialog pops up, choose Grayscale copy of layer and check the Invert mask box.

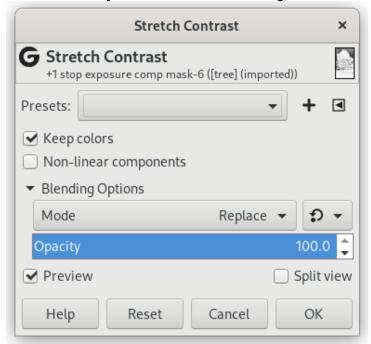


As shown in Figure 5 below, at this point the highlights will be brought back into the display range, meaning all RGB channel values are between 0.0f and 1.0f. But the image will probably look a little odd (sort of cloudy and flat), and depending on the image, the brightest highlights might actually have dark splotches—don't worry! this is temporary. **Figure 5**



Result of adding an inverse grayscale layer mask to bring the highlights back into the display range. Adding an inverse grayscale layer mask brings the highlights back into the display range, but at this point most images will look flat and cloudy, and some images will have dark splotches in the highlights. The next step—"Auto Stretch Contrast" performed on the mask—will take care of this problem.

5. Click on the layer mask to select it for editing, and then select Colors → Auto → Stretch Contrast...:



"Keep Colors" should be checked (though it doesn't really matter on grayscale images such as layer masks).

3/29/25, 9:58 PM 2. A step-by-step example showing how to recover shadow information using high bit depth GIMP's floating point Colors → Exposu...

Figure 6 below shows the final result: 👺 *tree-srab.xcf-4.0 (RGB color 32-bit lin 🗕 🖂 🗙 Lavers Layers Normal V Mode Opacity 100.0 Lock: 0 +1 stop exposure comp ree.png A Sample Points _ | 🗆 | × 🖒 Sample Points Pixel Pixel Red: 0.694152 Red 0.636863 0.906116 0.874528 Green: Green Blue: 0.966687 Blue: 0.942519 Alpha 1.000000 Alpha: 1.000000 Pixel Pixel Red: 0.697005 Red: 0.611730

Doing Colors → Auto → Stretch Contrast... on the layer mask removes the "cloudy" appearance, leaving a nicely brightened image with intact highlights.

0.894902 0.963538

1.000000

Colors → Auto → Stretch Contrast... on the mask is necessary because just like the image layer has out of gamut RGB channel values, the inverted grayscale mask contains out of gamut grayscale values. Colors \rightarrow Auto \rightarrow Stretch Contrast... brings all the mask grayscale values back into the display range, allowing the mask to proportionately compensate for the layer's otherwise out-of-gamut RGB channel values, masking more in the layer highlights and less/not at all in the image's shadows and midtones.

100% ~

GIMP built-in Linear ...

Notice that one of the sample points still has a blue RGB channel value that is slightly out of gamut. The easiest way to deal with this is to use Colors \rightarrow Levels... and drag the <u>middle slider triangle</u> to make a Gamma adjustment of 0.45 on the mask, not on the actual image layer. You can make this Gamma adjustment either on the entire mask (works well, less effort). Or else you can make the adjustment just on the mask shadows (which correspond to the layer highlights), in which case you'd load the mask as a selection, invert the selection, and make the Gamma adjustment. Or if the remaining out of gamut channel values are only very slightly out of gamut, make a "New from Visible" layer and then Colors → Auto → Stretch Contrast... the result to bring the remaining channel values back into gamut. That's the whole procedure for using the Exposure operation to add a stop of positive exposure compensation to the shadows without blowing out the highlights. Now you can either fine-tune the mask, or else just make a "New from Visible" layer and continue editing your nicely brightened image. Depending on the image and also on your artistic intentions for the image, the mask might not need fine-tuning. But very often you'll want to modify the resulting tonal distribution by doing a gamma correction, or perhaps a Curves operation on the mask, or else by painting directly on the mask. And sometimes you'll want to blur the mask to restore micro contrast.

Green

Blue

Alpha

0.902261

1.083155

1.000000

Green

Blue:

Alpha:



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3. Use Notes

3. Use Notes



Appendix C. Tone Mapping and Shadow Recovery Using GIMP's Colors \rightarrow Exposure...



3. Use Notes

- Depending on your particular artistic intentions for an image, some images are more likely than others to benefit from being tone mapped using floating point Exposure operation. Your mileage may vary, but typically the procedure described on this page works best for photographs of scenes with a pronounced tonal difference between the highlights and shadows, as per typical sunny day "sky-ground" photographs.
- 2. For adding just one stop of positive exposure compensation, the procedure described on this page works really well. Depending on the image you might want to blur the mask using an edge-respecting blur algorithm, and/or tweak the mask using the Exposure operation, Curves, etc. But only modify the mask after using Auto Stretch Contrast on the mask. Otherwise results will be unpredictable: Gamma adjustments produce odd results when operating on out of gamut values, and Curves will summarily clip out of gamut values.
- For adding more than one stop of exposure compensation, you can use one or more than one positive-exposure-compensation layers. Either way the layer mask(s) will need careful tweaking that's very image-specific and also specific to your intended result. Figure 7 shows an example of using two exposure compensation layers to add two and a half stops of exposure compensation to the shadows and midtones of an image:

 Using GIMP's floating point unbounded Levels plus layer masks to add two stops of positive exposure compensation to the shadows and midtones of a photograph of an apple orchard truck that was taken in bright sunshine.

Figure 7

Image from the camera, underexposed to avoid blowing out highlights.

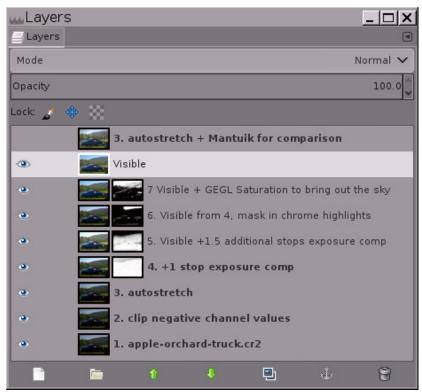


After tone mapping/shadow recovery using high bit depth GIMP's floating point Exposure operation.



For comparison, Mantuik tone mapping using the GEGL default settings.

Using GIMP's floating point Exposure operation plus layer masks to add two and a half stops of positive exposure compensation to the shadows and midtones of a "bright sun" photograph of an apple orchard truck.



A screenshot of the layer stack that I used to tone-map the photograph of the apple orchard truck. Tone-mapping by hand gives you complete control over the resulting image. Mantuik and other "automagic" tone-mapping algorithms are CPU-intensive, unpredictable, and often produce unnatural-looking results.

4. Before using the Exposure operation to add positive exposure compensation, the base layer should already be stretched to its maximum dynamic range. The easiest way to stretch the base layer to its maximum dynamic range is to do Colors → Auto → Stretch Contrast... and make sure that Keep colors is checked.

If you've never used an unbounded floating point image editor before, Colors \rightarrow Auto \rightarrow Stretch Contrast... can produce an unexpected result: The image might actually end up with a severely reduced dynamic range, having either lighter shadows or darker highlights or both:

Before and after doing Colors \rightarrow Auto \rightarrow Stretch Contrast... on the base layer, plus the final image after tone mapping using Colors \rightarrow Exposure...:

Figure 8

1. Image from the camera



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3. Use Notes 2. After doing Colors \rightarrow Auto \rightarrow Stretch Contrast....

3. Final "Power lines" image.

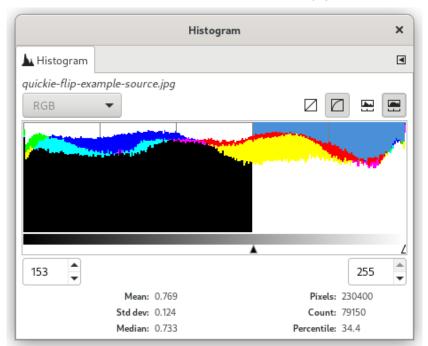


- a. This scene-referred interpolated raw file from the PhotoFlow raw processor (which provides a GIMP plug-in for easy opening of raw files) has out-of-display-range RGB channel values that will be brought back into the display range by doing Colors → Auto → Stretch Contrast....
- b. After doing Colors → Auto → Stretch Contrast..., shadows are lighter and highlights are darker because the dynamic range has been compressed to fit within the display range. This looks like an editing step in the wrong direction! but actually it's necessary.
- c. Here's the final "Power lines" image after tone mapping the scene-referred interpolated raw file using the procedure described in this tutorial.

As captured by the raw file, this picture of power lines marching into the distance is a typical result of taking a photograph at noon on a bright sunny day: The sky and clouds looked pretty good right out of the camera, but the ground was far too dark. So the image could benefit from some tone mapping to raise the shadows and midtones. The first step is to select Colors \rightarrow Auto \rightarrow Stretch Contrast... to bring any channel values that are less than 0.0f or greater than 1.0f back within the display range of 0.0 to 1.0 floating point.

Performing Colors \rightarrow Auto \rightarrow Stretch Contrast... to bring the channel values back inside the display range doesn't exactly look like an editing step in the right direction for tone-mapping this particular image! but really it is. Using Colors \rightarrow Exposure... to add positive exposure compensation to the shadows and midtones won't work if the image has channel values that fall outside the display range.

- 5. **Dispensing with "useless" shadow and highlight information:** Sometimes interpolated raw files of photographs of high dynamic range scenes end up with a sprinkling of highlight and shadow pixels that contains essentially no useful information. The easiest thing to do with such pixels is to use the Exposure operation to set the desired black and white points, and then clip the resulting out of gamut channel information.
 - Useless highlight information: For the "Power lines" picture shown in Figure 8 above, after applying Colors → Auto → Stretch Contrast..., a measly 48 pixels occupied nearly half the tonal range (see the histogram to the right). A little investigation with GIMP's Threshold tool revealed that all 48 pixels are the peak values of specular highlights on the ceramic insulators on the power line pole in the foreground.

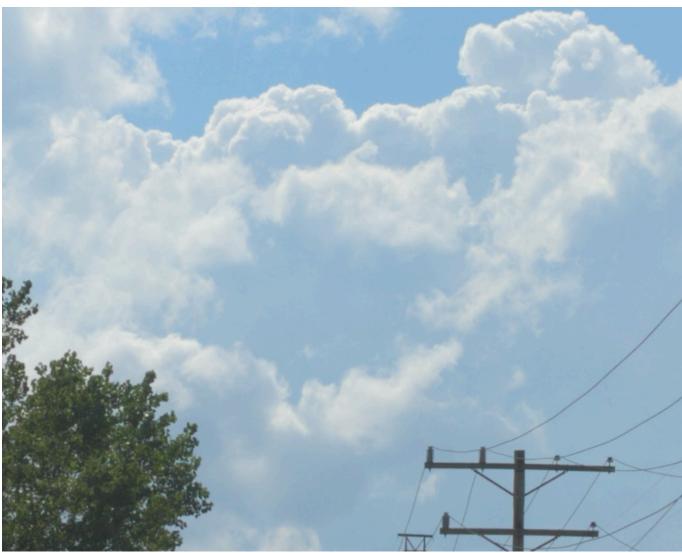


In cases where nearly half the histogram is occupied by a sprinkling of specular highlights, clipping the pixels is often the best and easiest solution. For the "Power lines" image, the 48 pixels in question carried essentially zero information. Use Colors \rightarrow Exposure... to raise the white point, and then Colors \rightarrow RGB Clip... to actually clip the channel information in the highlights (this time making sure the Clip high pixel values box was checked).

- Useless shadow information: Some raw processors can output images with negative channel values. And previous edits using high bit depth GIMP might have produced negative channel values. If doing Colors → Auto → Stretch Contrast... on your base image layer makes the image a whole lot lighter in the shadows, the problem is negative RGB channel values. One solution is to use Colors → Exposure... to move the black point to where you want it to be, and then clip the negative channel values. Here are two ways to clip negative channel values:
 - Use Colors → RGB Clip..., making sure to uncheck the Clip high pixel values box.
 - Or else create a solid black layer above your base image layer, set the blend mode to "Lighten only", and make a "New from Visible" layer.
- 6. **Blurring the mask to restore micro contrast:** Putting an inverse mask on a layer that's used to add positive exposure compensation necessarily slightly flattens micro contrast. Depending on your artistic intentions for the image, you might want to blur the mask to restore micro contrast. The trick is how to blur the mask without introducing "halos" around the edges of objects in the image. Small radius Gaussian blurs produce small but distressingly obvious halos around dark edges. A large radius gaussian blur sometimes works but just as often produces a large obvious halo separating the brighter and darker portions of the image. For many images a better solution is to blur the mask use an edge-respecting filter such as the GIMP G'MIC bilateral smooth filter:

Adding exposure compensation with and without bilateral smoothing of the mask.

Figure 9



Without applying bilateral smoothing to the mask, micro contrast is flattened.



After applying bilateral smoothing to the mask, micro contrast is restored. Adding exposure compensation combined with an inverse grayscale mask does flatten micro contrast, which might or might not be desirable depending on your artistic intentions for the image. To restore micro contrast, try using an edge-respecting blur such as G'MIC's bilateral smoothing filter. GIMP G'MIC doesn't work on layer masks. A workaround is to turn the unblurred mask into a selection, save the selection as a channel, and then drag the channel to the layer stack for blurring.

7. An essential component of the procedure for using the Exposure operation to add positive exposure compensation to images with dark shadows and midtones needs to be explicitly mentioned: Not only is the high bit depth GIMP's Exposure operation unbounded at floating point precision — <u>layer masks are also unbounded</u>.

If the inverted grayscale masks were summarily clipped (as is the case when editing at integer precision), then the procedure described in this tutorial wouldn't work.







2. A step-by-step example showing how to recover shadow information using high bit depth GIMP's floating point Colors → Exposure... operation

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4. Conclusion

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4. Conclusion



Appendix C. Tone Mapping and Shadow Recovery Using GIMP's Colors → Exposure...



4. Conclusion

Photographs taken in bright direct sunlight typically are of high dynamic range scenes, and the resulting camera file usually requires careful tone mapping to produce a satisfactory final image. High bit depth GIMP's floating point Exposure operation provides a very useful tool for dealing with this type of image, and of course is equally useful for any image where the goal is to raise the shadows and midtones without blowing out the highlights. High bit depth GIMP's floating point Exposure operation combined with a suitable layer mask can also be used to darken portions of the image, either by moving the upper left Value slider to the right (darkens the image by increasing contrast and also increases saturation; requires careful masking to avoid producing regions of solid black), or moving the lower right Value slider to the left (darkens the image by decreasing contrast, useful for deemphasizing portions of the image).

This is a GIMP-specific tutorial. However, the same technique can be employed using the PhotoFlow raw processor and possibly other image editors that allow for 32-bit floating point processing using unbounded RGB channel values. The neat thing about using this technique in PhotoFlow is that PhotoFlow uses nodes, which allows for completely non-destructive editing of the inverted grayscale mask that's used to recover the highlight detail after applying positive exposure compensation to raise the tonality of the shadows and midtones (even if you close and reopen the image, if you save the image's PFI file).

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4. Conclusion



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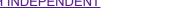






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Appendix E. Eeek! There is Missing Help

